SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS



STANDARD CONSTRUCTION DRAWINGS

Standard Construction Drawings

| Drawing Description | Drawing No |
|--|-------------------|
| Rural Road Standards | |
| Rural Road Design Criteria | A-1 |
| Typical Rural Road Section-Multiuse Path | A-1a |
| Typical Rural Road Section-Less than 250 Future ADT | A-1b |
| Typical Rural Road Section-250 to 400 Future ADT | A-1c |
| Typical Rural Road Section-401 to 1000 Future ADT Flat & Rolling | A-1d |
| Typical Rural Road Section-401 to 1000 Future Mountainous | A-1e |
| Typical Rural Road Section-1000 to 3000 Future ADT Flat & Rolling | A-1f |
| Typical Rural Road Section-1000 to 3000 Future ADT Mountainous | |
| Typical Rural Road Section-3001 to 6000 Future ADT | A-1h |
| Typical Rural Road Section-Gravel Road Standard | A-1j |
| Urban Street Standards | |
| Urban Street Design Criteria | A-2 |
| | A-2a |
| Typical Street Road Section-Less than 500 Future ADT Flat, Rolling & Mountainous | |
| Typical Street Road Section-500 to 5000 Future ADT Flat | |
| 500 to 1500 Future ADT Rolling & Mountainous | A-2c |
| Typical Street Road Section-5001 to 16000 Future ADT without Parking | |
| 5001 to 16000 Future ADT with Parking | A-2d |
| Typical Street Road Section-16000 to 24000 Future ADT | A-2e |
| Commercial-Industrial Road Standards | |
| Commercial-Industrial Road Design Criteria | A-3 |
| Commercial-Industrial Road Design Criteria | A-3a |
| Typical Commercial-Industrial-Urban Streets Less Than 5000 to 16000 Future ADT | A-3b |
| Typical Commercial-Industrial-Urban Streets Greater Than 16000 Future ADT | A-3c |
| Road Design Criteria | |
| Stopping Sight Distance on Sag Vertical Curves | A-4 |
| Stopping Sight Distance on Crest Vertical Curves | A-4a |
| Super-Elevation on Horizontal Curves | |
| Sight Distance Design Criteria | |
| Stopping Sight Distance on Horizontal Curves | A-5 |
| Driveway Sight Distance | |
| Site Distance Control Areas | A-5b |
| Road Layout Criteria | |
| Rural Cul-de-Sac | A-6 |
| Urban Cul-de-Sac | A-6a |
| Typical Knuckle_ | A-6b |
| Urban Bus Turnout & Loading Area | |
| Typical Fire Access Turn Around Standards | A-6d |

Standard Construction Drawings

| Drawing Description | Drawing No |
|---|------------|
| Driveways: Rural | |
| Rural Driveway, Layout Standards | B-1 |
| Rural Driveway, Type 1: Asphalt Driveway | B-1a |
| Rural Driveway, Type 2: Asphalt Driveway | B-1b |
| Rural Driveway, Type 3: Asphalt Driveway with Culvert | B-1c |
| Rural Driveway, Type 4: Asphalt Driveway w/ Retaining Wall | B-1d |
| Driveways: Urban | |
| Urban Residential Driveway, Layout Standards | B-2 |
| Urban Residential Driveway, Residential Driveway | B-2a |
| Driveways: Commercial-Industrial | |
| Commercial-Industrial Driveway, Layout Standards | B-3 |
| Commercial-Industrial Driveway, Standard Driveway | B-3a |
| Commercial-Industrial Driveway, High Volume Driveway | B-3b |
| Commercial-Industrial Driveway, Upward / Downward Driveway | B-3c |
| Curb, Gutter & Sidewalk | |
| Expansion & Weakened Plane Joint Requirements | C-1 |
| Type "A" Concrete Curb & Gutter | C-2 |
| Type "C" Concrete Curb | C-2a |
| Asphalt Dikes | C-3 |
| Sidewalks | C-4 |
| Curb Ramps | C-5 |
| Asphalt Ramp Detail | C-5a |
| Drainage | |
| Deep Retention Basin | D-1 |
| Shallow Retention Basin | D-1a |
| Catch Basin | D-2 |
| Rural Catch Basin-Edge of Pavement Condition | |
| Rural Catch Basin-Asphalt Dike Condition | D-2b |
| Storm Drain Manhole for Pipe Diameters from 18" to 36" | D-3 |
| Storm Drain Manhole for Pipe Diameters Greater Than 36" | |
| Sidewalk Underdrain, Residential | D-4 |
| Sidewalk Underdrain, Commercial (Zero Setback) | D-4a |
| Cross Gutter & Spandrel | D-5 |
| Hydrology | |
| Average Annual Rainfall | H-1 |
| Time of Concentration for Watershed Less Than 200 Acres | H-2 |
| Runnoff Coefficients for Developed Areas | H-3 |
| Runnoff Coefficients for Undeveloped Areas | H-3a |
| Rainfall Intensity Data | H-4 |
| Rainfall Intensity Data Rock Slope Protection Sizing Method at Culvert Outlets Rock Slope Protection Sizing Method at Culvert Outlets | H-5 |
| Rock Slope Protection Sizing Method at Culvert Outlets | H-5a |
| Layout | |
| Standard County Title Blocks | L-1 |
| Standard Abbreviations | L-2 |

Standard Construction Drawings

| Drawing Description | Drawing No |
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| Miscellaneous | |
| Standard Street Monument for Paved Roads | M-1 |
| Standard Street Monument for Gravel Roads | M-1a |
| Metal Beam Barricade | M-2 |
| Temporary Wood Beam Barricade | M-2a |
| Sidewalk Barricade | M-3 |
| Standard Street Sign | M-4 |
| Sidewalk Tree Planter Detail | M-5 |
| Tree Trimming Methods | M-5a |
| Tree Protection Detail | M-5b |
| | |
| Repair Purel Bood Widening Eviating AC Bevernent Less Than 2.5" Thick | R-1 |
| Rural Road Widening, Existing AC Pavement Less Than 3.5" Thick | |
| Rural Road Widening, Existing AC Pavement 3.5" Thick or Greater | |
| Urban Street Widening, Existing AC Pavement Less Than 3.5" Thick | |
| Urban Street Widening, Existing AC Pavement 3.5" Thick or Greater | R-2a |
| Curb, Gutter & Sidewalk Repair | R-ა |
| Trench Repair, Existing AC Pavement Less Than 3.5" Thick | |
| Trench Repair, Existing AC Pavement 3.5" Thick or Greater | R-4a |
| Sanitary Sewer | |
| Sewer Manhole | S-1 |
| Sewer Drop Mannole | S-1a |
| Sewer Main Cleanout | S-2 |
| Sewer Lateral | S-3 |
| Sewer Lateral for Deep Mains | S-3a |
| Utilities | |
| Location of Utilities | U-1 |
| Location of Service Laterals | U-2 |
| Utility Separation Criteria | 11.0 |
| Utility Separation Criteria, Case 1: New Sewer Mains | U-3a |
| Utility Separation Criteria, Case 2: New Water Mains | |
| Trench Detail, Existing and New Paved Roads | |
| Trench Detail, Non-Paved Areas | |
| Shallow Trench Detail | U-4b |
| Water | |
| Thrust Block Requirements | W-1 |
| Thrust Block Details_ | |
| Fire Hydrant Detail | |
| Fire Hydrant DetailValve Anchor & Box | W-3 |
| Water Service Connection | |
| Water Service Connection | |
| Blow-Off Assembly | |
| 2" Blow-Off Assembly | vv-sa W-6 |
| Water Sampling Station | vv-6 W-7 |
| Water Sampling Station | vv-7 W-8 |
| New Waterline Connection Details | vv-6 W-9 |
| New Waterline Flushing Detail | vv-9 W-10 |
| vvatorino Out-in roo a riot rap Assembly | V V - 1 U |

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| ADT | - | ADT | ADT | ADT | ADT | | |
| | | | | | | | |
| CRITERIA<250 |) | 250-400 | 0 401-1000 | 1001-3000 | 3001-100 | 00 | |
| · | | | | | | | |
| DESIGN SPEED, MILES PER HOUR | <u>≀, (MININ</u> | <u>/IUM)</u> | | | | | |
| FLAT 40 | | 50 | 50 | 55 | 55 | | |
| ROLLING 30 | | 40 | 40 | 40 | 45 | | |
| MOUNTAINOUS 20 | | 20 | 30 | 30 | 35 | | |
| | | | | | | | |
| CUDVE DADIUS ET (MINIMUM) | | | | | | | |
| CURVE RADIUS, FT. (MINIMUM) | | 000 | 000 | 4050 | 4050 | | |
| FLAT 510 | | 830 | 830 | 1050 | 1050 | | |
| ROLLING 275 | | 510 | 510 | 510 | 670 | | |
| MOUNTAINOUS 110 | | 115 | 250 | 275 | 350 | | |
| | | | | | | | |
| GRADE, PERCENT (MAXIMUM) | | | | | | | |
| FLAT 7 | | 6 | 6 | 6 | 6 | | |
| ROLLING 9 | | 8 | 8 | 8 | 8 | | |
| MOUNTAINOUS 12 | | 12 | 10 | 10 | 10 | | |
| | | | | | | | |

- 1. ADT IS BASED UPON A 20-YEAR PROJECTION.
- 2. ADT IN EXCESS OF 10,000 WILL REQUIRE SPECIAL DESIGN REQUIREMENTS BY THE DEPARTMENT.
- 3. SUPERELEVATION MAY BE REQUIRED, SEE STANDARD DRAWING A-4b.
- 4. THE STRUCTURAL SECTION SHALL BE BASED ON THE TRAFFIC INDEX AS PROVIDED BY THE DEPARTMENT.
- 5. RIGHT OF WAY SHALL BE THE MINIMUM REQUIRED BY THE DESIGN STANDARDS.
- FOR ADT <250 GRADES MAY BE INCREASED BY 150 % FOR RELATIVELY SHORT LENGTHS.

FLAT ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE LITTLE OR NO TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE AND WHICH COULD BE CONSTRUCTED WITH MINOR CUTS AND FILLS.

ROLLING ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE WHICH REQUIRE SOME MODERATE CUTS AND FILL.

MOUNTAINOUS ROADWAYS ARE THOSE SECTIONS OF ROADWAY WHICH REQUIRE MAXIMUM OR NEAR MAXIMUM GRADES AND MINIMUM CURVE RADII IN ORDER TO REDUCE THE CUTS AND FILLS TO PRACTICAL AND VISUALLY ACCEPTABLE HEIGHTS.

THE DETERMINATION OF FLAT, ROLLING, OR MOUNTAINOUS ROADWAYS SHALL BE UNIFORM OVER THE FULL LENGTH OF A ROADWAY EXCEPT WHERE THE DEPARTMENT DETERMINES THAT A SAFE TRANSITION MAY BE MADE.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

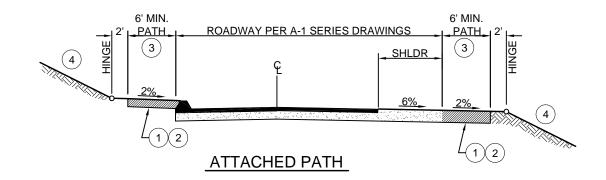
RURAL ROAD DESIGN CRITERIA

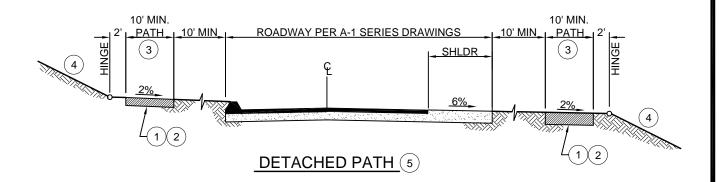
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- 1. MAXIMUM LONGITUDINAL GRADE ON THE DETACHED PATH SHALL BE 5%. HIGHER GRADES MAY BE ALLOWED BUT ONLY WITH PRIOR APPROVAL FROM THE COUNTY PARKS & RECREATION DEPARTMENT.
- 2. PATH MATERIAL SHALL BE: 6-INCHES MINIMUM DEPTH ANGULAR DECOMPOSED GRANITE WITH A MAXIMUM AGGREGATE SIZE OF 3/8-INCH OR LESS AND COMPACTED TO A MINIMUM OF 90%. NATIVE SANDY MATERIAL MAY BE USED IF IT IS CONFINED EITHER BY THE ROADWAY OR BY AN APPROVED ROOT BARRIER INSTALLED ON BOTH SIDES OF PATH, AND CONSTRUCTED TO A MINIMUM DEPTH OF OF 24-INCHES AND COMPACTED TO 90%. THE PATH SHALL BE TOLERANT TO NORMAL USE AND RESISTANT TO EROSION.
- 3. NO OBSTACLES OR AT-GRADE VAULTS SHALL BE LOCATED WITHIN THE LIMITS OF THE PATH. ADJACENT TO THE PATH THE FOLLOWING MINIMUM CLEARANCES TO OBSTACLES SHALL BE MAINTAINED:

MINIMUM OF 2' CLEARANCE ON EACH SIDE OF PATH.

MINIMUM OF 5' CLEARANCE FROM NEW TREES, SHRUBS AND OTHER OBSTRUCTIONS.

MINIMUM OF 10' CLEARANCE FROM UNFENCED DRAINAGE BASINS.

MINIMUM OF 12' CLEARANCE TO OVERHEAD BRANCHES, SIGNS, AND OTHER ABOVE GRADE OBSTACLES.

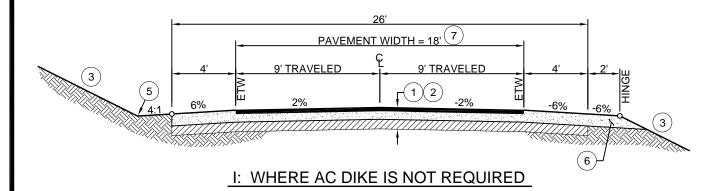
- 4. CUT AND FILL SLOPES BEYOND HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) AND SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL.
- ALL RURAL ROADS WITH PREVAILING SPEEDS OF 45 MPH OR GREATER AND AN ADT OF 3,000 OR GREATER SHALL REQUIRE A DETACHED PATH.
- 6. NO PORTION OF THE PATH SHALL BE USED AS PART OF A SURFACE DRAINAGE CONVEYANCE SYSTEM.
- 7. IF DRAINAGE FACILITIES ARE REQUIRED THEY SHALL BE EITHER STORM DRAIN PIPES WITH A MINIMUM COVER OF 1-FOOT OVER THE PATH OR A CONCRETE DRY CROSSING (DESIGN TO BE APPROVED BY THE DEPARTMENT).
- 8. PATH SIGNAGE SHALL BE REQUIRED AND MUST HAVE PRIOR APPROVAL FROM THE COUNTY PARKS & RECREATION DEPARTMENT.

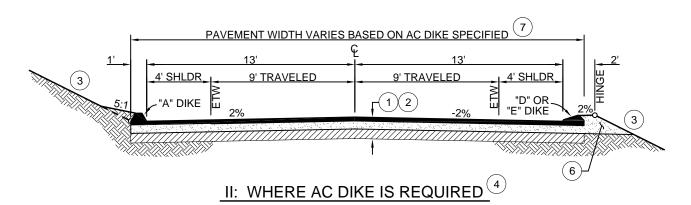


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- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

227 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

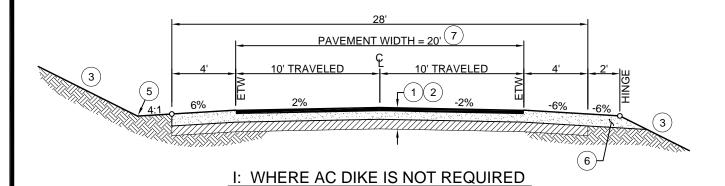
- CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ASPHALT DIKE SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER. TYPE "A" DIKE SHALL BE USED WHEN THE ROADWAY IS BELOW EXISTING OR FINISHED SURFACE. TYPE "D" OR "E" DIKE SHALL BE REQUIRED IN CONDITIONS WHERE THE ROADWAY IS ABOVE OR LEVEL WITH EXISTING OR FINISHED SURFACE.
- 5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
- 7. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
- 8. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

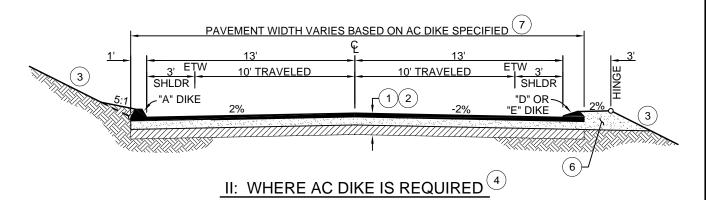


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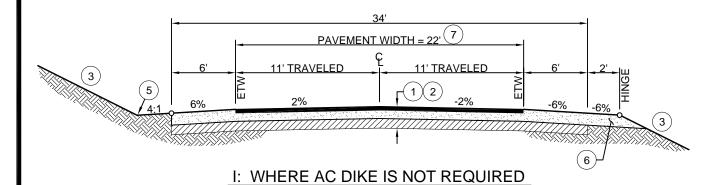
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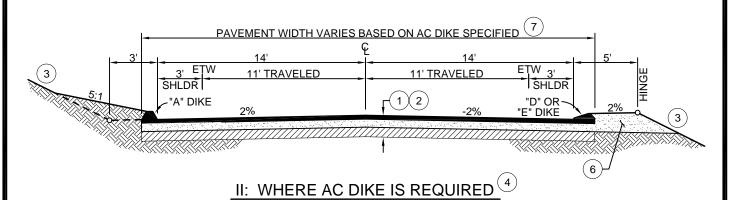
12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

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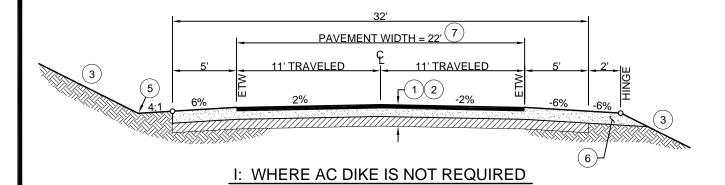
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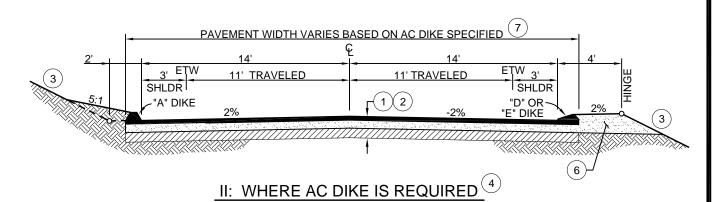
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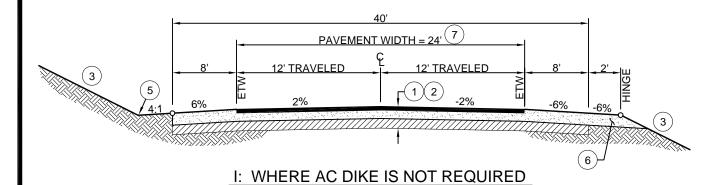


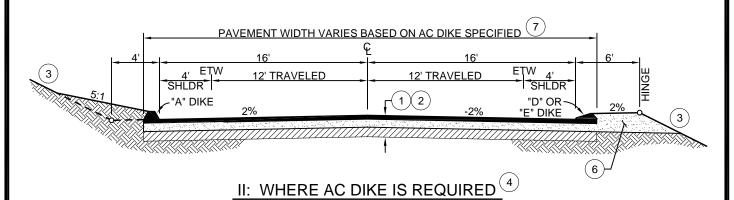
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- 2. TYPICAL SECTION SHALL BE:
 - ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
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- 8. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

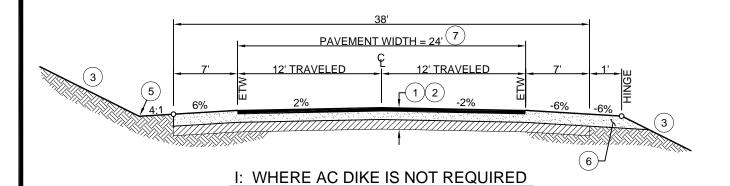


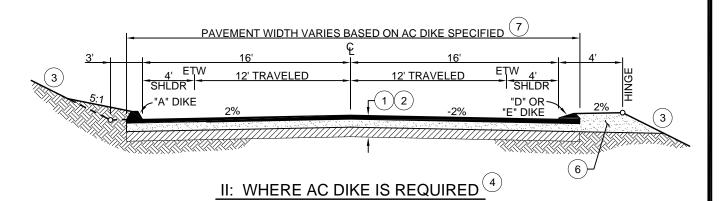
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- THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:
 - ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 2222 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- 3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ASPHALT DIKE SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER. TYPE "A" DIKE SHALL BE USED WHEN THE ROADWAY IS BELOW EXISTING OR FINISHED SURFACE. TYPE "D" OR "E" DIKE SHALL BE REQUIRED IN CONDITIONS WHERE THE ROADWAY IS ABOVE OR LEVEL WITH EXISTING OR FINISHED SURFACE.
- 5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- 6. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
- 7. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
- 8. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

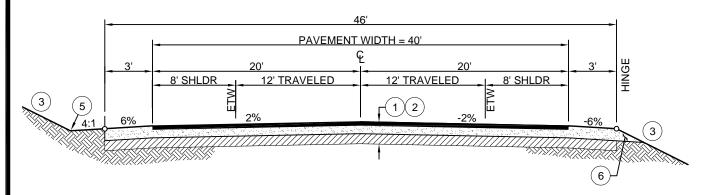


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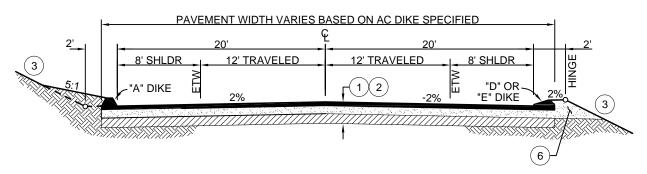
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I: WHERE AC DIKE IS NOT REQUIRED



II: WHERE AC DIKE IS REQUIRED 4

NOTES:

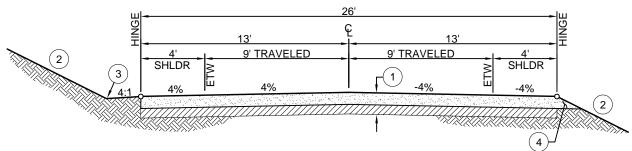
- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

- 3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ASPHALT DIKE SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER. TYPE "A" DIKE SHALL BE USED WHEN THE ROADWAY IS BELOW EXISTING OR FINISHED SURFACE. TYPE "D" OR "E" DIKE SHALL BE REQUIRED IN CONDITIONS WHERE THE ROADWAY IS ABOVE OR LEVEL WITH EXISTING OR FINISHED SURFACE.
- 5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- 6. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
- 7. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

TYPICAL RURAL ROAD SECTION 3001 TO 6000 FUTURE ADT

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- 1. TYPICAL SECTION SHALL BE:
 - 4" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION FOR R≥40, OR
 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION FOR R<40, OVER
 12" MINIMUM SUBGRADE COMPACTED TO 95% RELATIVE COMPACTION
- 2. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 3. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- 4. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.

DESIGN CRITERIA

| | MIN. DESIGN SPEED | MIN. CURVE RADIUS | MAX. GRADE |
|----------|-------------------|-------------------|------------|
| FLAT | 30 mph | 275 ft | 7% |
| ROLLING | 20 mph | 130 ft | 12% |
| MOUNTAIN | 15 mph | 75 ft | 12% |

DESIGN CRITERIA NOTES:

- 1. OPTION FOR USE IN RURAL AND AGRICULTURAL LAND USE CATEGORIES WHERE THE 20 YEAR PROJECTED ADT DOES NOT EXCEED 100.
- 2. MINIMUM LONGITUDINAL SLOPE SHALL BE 0.50%.
- GRADES GREATER THAN 12% SHALL REQUIRE PAVED SURFACES PER DRAWING A-1b AND THE FIRE AGENCY STANDARDS.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

TYPICAL RURAL ROAD SECTION

GRAVEL ROAD STANDARD

| es | cription | | Approved | Date | Description | | |
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| | | | | | | | |
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| | | 4.D.T | | 4.D.T | ADT | 4.D.T | |
| | | ADT | | ADT | ADT | ADT | |
| | CRITERIA_ | <500 | 5 | 00-1500 | 1500-5000 | >5000 | |
| | | | | | | | |
| | DESIGN SPEED, MILES PER I | | <u>(MINIM</u>) | | | | |
| | FLAT | 25 | | 35 | 45 | 45 | |
| | ROLLING | 25 | | 35 | 40 | 40 | |
| | MOUNTAINOUS | 20 | | 30 | 35 | 35 | |
| | | | | | | | |
| | CURVE RADIUS, FT. (MINIMU | M) | | | | | |
| | FLAT | 250 | | 600 | 1100 | 1100 | |
| | ROLLING | 250 | | 600 | 800 | 800 | |
| | MOUNTAINOUS | 125 | | 400 | 600 | 600 | |
| | | | | | | | |
| | GRADE, PERCENT (MAXIMU | <u>M)</u> | | | | | |
| | FLAT | 7 | | 6 | 4 | 3 | |
| | ROLLING | 12 | | 9 | 6 | 5 | |
| | MOUNTAINOUS | 15 | | 13 | 8 | 7 | |

Revisions

NOTES:

- 1. ADT IS BASED UPON A 20-YEAR PROJECTION.
- 2. SUPERELEVATION NOT PERMITTED ON URBAN ROADS.
- 3. THE STRUCTURAL SECTION SHALL BE BASED ON THE TRAFFIC INDEX AS PROVIDED BY THE DEPARTMENT.
- 4. RIGHT OF WAY SHALL BE THE MINIMUM REQUIRED BY THE DESIGN STANDARDS.

<u>FLAT ROADWAYS</u> ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE LITTLE OR NO TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE AND WHICH COULD BE CONSTRUCTED WITH MINOR CUTS AND FILLS.

ROLLING ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE WHICH REQUIRE SOME MODERATE CUTS AND FILL.

MOUNTAINOUS ROADWAYS ARE THOSE SECTIONS OF ROADWAY WHICH REQUIRE MAXIMUM OR NEAR MAXIMUM GRADES AND MINIMUM CURVE RADII IN ORDER TO REDUCE THE CUTS AND FILLS TO PRACTICAL AND VISUALLY ACCEPTABLE HEIGHTS.

THE DETERMINATION OF FLAT, ROLLING, OR MOUNTAINOUS ROADWAYS SHALL BE UNIFORM OVER THE FULL LENGTH OF A ROADWAY EXCEPT WHERE THE DEPARTMENT DETERMINES THAT A SAFE TRANSITION MAY BE MADE.

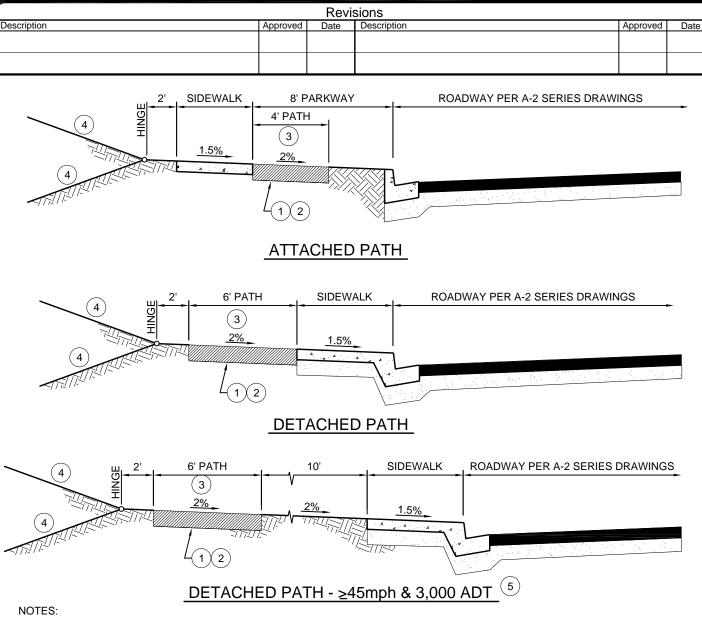
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
URBAN STREET DESIGN CRITERIA

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- 1. MAXIMUM LONGITUDINAL GRADE ON THE DETACHED PATH SHOULD BE 5%. HIGHER GRADES MAY BE ALLOWED BUT ONLY WITH PRIOR APPROVAL FROM THE COUNTY PARKS & RECREATION DEPARTMENT.
- 2. PATH MATERIAL SHALL BE: 6-INCHES MINIMUM DEPTH ANGULAR DECOMPOSED GRANITE WITH A MAXIMUM AGGREGATE SIZE OF 3/8-INCH OR LESS AND COMPACTED TO A MINIMUM OF 90%. NATIVE SANDY MATERIAL MAY BE USED IF IT IS CONFINED EITHER BY THE ROADWAY OR BY AN APPROVED ROOT BARRIER INSTALLED ON BOTH SIDES OF PATH, AND CONSTRUCTED TO A MINIMUM DEPTH OF OF 24-INCHES AND COMPACTED TO 90%. THE PATH SHALL BE TOLERANT TO NORMAL USE AND RESISTANT TO EROSION.
- 3. NO OBSTACLES OR AT-GRADE VAULTS SHALL BE LOCATED WITHIN THE LIMITS OF THE PATH. ADJACENT TO THE PATH THE FOLLOWING MINIMUM CLEARANCES TO OBSTACLES SHALL BE MAINTAINED:

MINIMUM OF 2' CLEARANCE ON EACH SIDE OF PATH.

MINIMUM OF 5' CLEARANCE FROM NEW TREES, SHRUBS, AND OTHER OBSTRUCTIONS.

MINIMUM OF 10' CLEARANCE FROM UNFENCED DRAINAGE BASINS.

MINIMUM OF 12' CLEARANCE TO OVERHEAD BRANCHES, SIGNS, AND OTHER ABOVE GRADE OBSTACLES.

- 4. CUT AND FILL SLOPES BEYOND HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) AND SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL.
- ALL URBAN ROADS WITH PREVAILING SPEEDS OF 45 MPH OR GREATER AND AN ADT OF 3,000 OR GREATER SHALL LOCATE THE PATH 5-FEET FROM THE BACK OF SIDEWALK.
- 6. NO PORTION OF THE PATH SHALL BE USED AS PART OF A SURFACE DRAINAGE CONVEYANCE SYSTEM.
- 7. IF DRAINAGE FACILITIES ARE REQUIRED THEY SHALL BE EITHER STORM DRAIN PIPES WITH A MINIMUM COVER OF 1-FOOT OVER THE PATH OR A CONCRETE DRY CROSSING (DESIGN TO BE APPROVED BY THE DEPARTMENT).
- 8. PATH SIGNAGE SHALL BE REQUIRED AND MUST HAVE PRIOR APPROVAL FROM THE COUNTY PARKS & RECREATION DEPARTMENT.

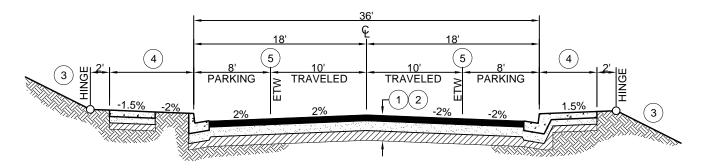


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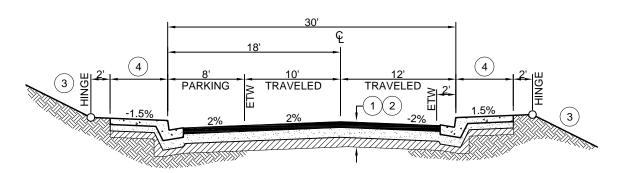
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I: LESS THAN 500 FUTURE ADT-FLAT & ROLLING



II: LESS THAN 500 FUTURE ADT-MOUNTAINOUS

NOTES

- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER

☐ CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

2222 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

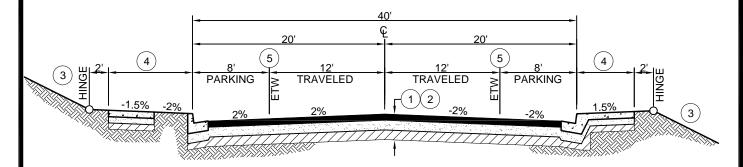
SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

- CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
- 5. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
- OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
- 7. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
- 8. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
- A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

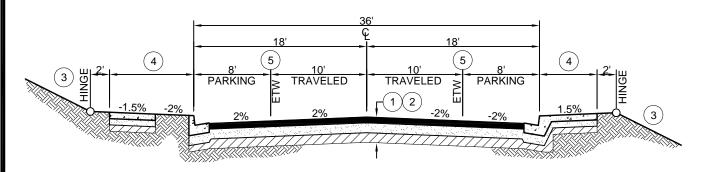
TYPICAL URBAN STREET SECTION LESS THAN 500 FUTURE ADT FLAT & ROLLING LESS THAN 500 FUTURE ADT MOUNTAINOUS

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I: 500 TO 5000 FUTURE ADT-FLAT



II: 500 TO 1500 FUTURE ADT-ROLLING & MOUNTAINOUS

NOTES:

- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

22 12 MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

- CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
- 5. ADDITIONAL WIDTH SHALL BE PROVIDED WHERE BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
- 6. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
- LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
- 8. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
- A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

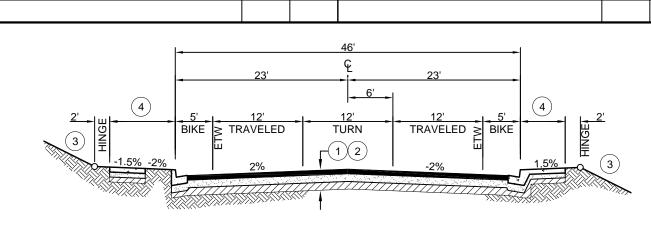
TYPICAL URBAN STREET SECTION

500 TO 5000 FUTURE ADT FLAT

500 TO 1500 FUTURE ADT-ROLLING & MOUNTAINOUS s

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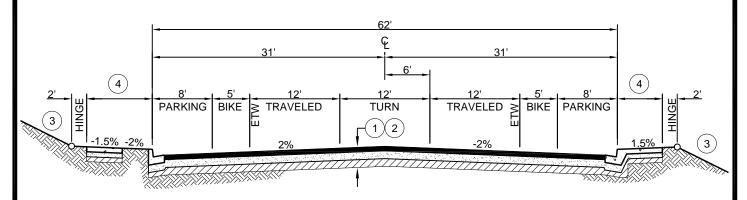


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I: 5001 TO 16000 FUTURE ADT WITHOUT PARKING



II: 5001 TO 16000 FUTURE ADT WITH PARKING

NOTES:

Description

- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER

CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

- 3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
- OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
- 6. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
- 7. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
- 8. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

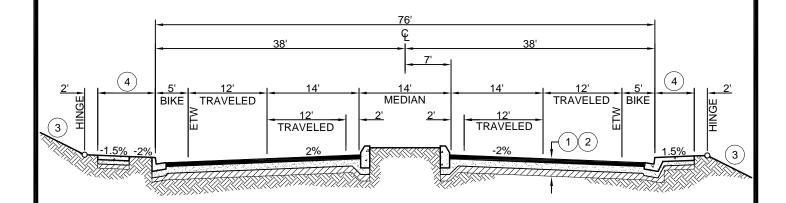


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16,000 TO 24,000 FUTURE ADT

1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.

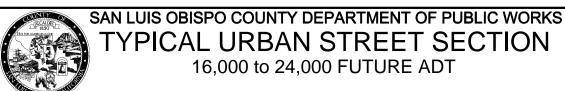
2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

2//// 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

- 3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
- 5. WHEN STREET PARKING IS REQUIRED A MINIMUM WIDTH OF 8-FEET SHALL BE PROVIDED.
- 6. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
- LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
- 8. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
- A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.



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| CRITERIA | <500 | 500-1500 | 0 1500-5000 | >5000 | | |
| DESIGN SPEED, MILES PI | ER HOUR. (MI | NIMUM) | | | | |
| FLAT | 25 | 30 | 35 | 35 | | |
| ROLLING | 25 | 30 | 30 | 30 | | |
| MOUNTAINOUS | 20 | 25 | 25 | 25 | | |
| CURVE RADIUS, FT. (MIN | INALINA) | | | | | |
| FLAT | 250 | 400 | 600 | 600 | | |
| ROLLING | 250 | 400 | 400 | 400 | | |
| MOUNTAINOUS | 125 | 250 | 250 | 250 | | |
| GRADE, PERCENT (MAXI | MUM) | | | | | |
| FLAT | 7 | 6 | 4 | 3 | | |
| ROLLING | 10 | 9 | 6 | 5 | | |
| MOUNTAINOUS | 10 | 9 | 8 | 5 7 | | |
| | | | | | | |

- 1. ADT IS BASED UPON A 20-YEAR PROJECTION.
- SUPERELEVATION NOT PERMITTED ON COMMERCIAL / INDUSTRIAL ROADS.
- 3. THE STRUCTURAL SECTION SHALL BE BASED ON THE TRAFFIC INDEX AS PROVIDED BY THE DEPARTMENT.
- 4. RIGHT OF WAY SHALL BE THE MINIMUM REQUIRED BY THE DESIGN STANDARDS.

FLAT ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE LITTLE OR NO TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE AND WHICH COULD BE CONSTRUCTED WITH MINOR CUTS AND FILLS.

ROLLING ROADWAYS ARE THOSE SECTIONS OF ROADWAY IN WHICH THERE ARE TOPOGRAPHIC RESTRAINTS ON VERTICAL AND HORIZONTAL SIGHT DISTANCE WHICH REQUIRE SOME MODERATE CUTS AND FILL.

MOUNTAINOUS ROADWAYS ARE THOSE SECTIONS OF ROADWAY WHICH REQUIRE MAXIMUM OR NEAR MAXIMUM GRADES AND MINIMUM CURVE RADII IN ORDER TO REDUCE THE CUTS AND FILLS TO PRACTICAL AND VISUALLY ACCEPTABLE HEIGHTS.

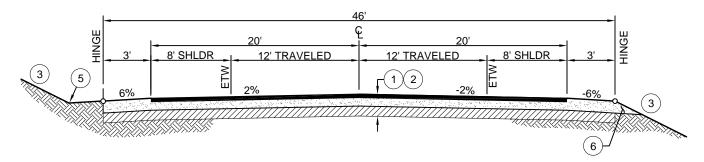
THE DETERMINATION OF FLAT, ROLLING, OR MOUNTAINOUS ROADWAYS SHALL BE UNIFORM OVER THE FULL LENGTH OF A ROADWAY EXCEPT WHERE THE DEPARTMENT DETERMINES THAT A SAFE TRANSITION MAY BE MADE.

> SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS COMMERCIAL-INDUSTRIAL ROAD **DESIGN CRITERIA**

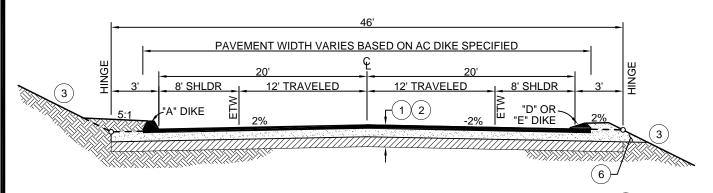
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I: LESS THAN 5000 FUTURE ADT WITHOUT AC DIKE - OUTSIDE URL



II: LESS THAN 5000 FUTURE ADT WITH AC DIKE - OUTSIDE URL

NOTES

- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

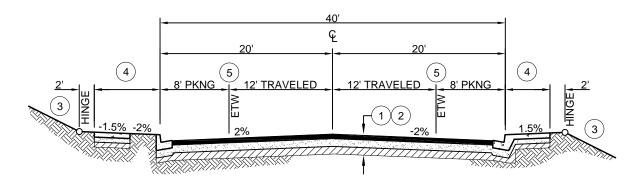
2//// 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

- CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ASPHALT DIKE SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER. TYPE "A" DIKE SHALL BE USED WHEN THE ROADWAY IS BELOW EXISTING OR FINISHED SURFACE. TYPE "D" OR "E" DIKE SHALL BE REQUIRED IN CONDITIONS WHERE THE ROADWAY IS ABOVE OR LEVEL WITH EXISTING OR FINISHED SURFACE.
- 5. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. THE SIDE SLOPE OF ANY DRAINAGE SWALE DIRECTLY ADJACENT TO THE EDGE OF ROADWAY SHALL NOT EXCEED 4h:1v. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- 6. THE AGGREGATE BASE MATERIAL SHALL EXTEND TO THE EDGE OF THE FILL SLOPE (CHOKER) TO ALLOW FOR STRUCTURAL ROAD SECTION DRAINAGE.
- 7. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

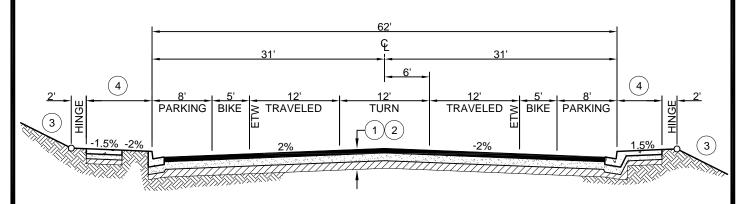
TYPICAL COMMERCIAL-INDUSTRIAL RURAL ROADS OUTSIDE URL LESS THAN 5,000 FUTURE ADT

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I: LESS THAN 5,000 FUTURE ADT - WITHIN URL



II: 5,000 TO 16,000 FUTURE ADT - WITHIN URL

NOTES:

- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

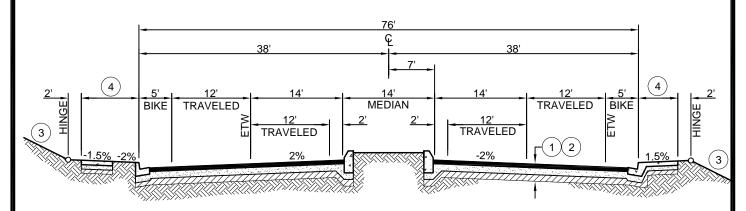
SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

- 3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
- 5. ADDITIONAL 5-FOOT WIDTH SHALL BE PROVIDED WHERE BICYCLE LANES ARE REQUIRED BY THE DESIGN STANDARDS.
- 6. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
- 7. LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
- 8. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
- A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

TYPICAL COMMERCIAL-INDUSTRIAL
URBAN STREETS WITHIN URL
LESS THAN 5,000 TO 16,000 FUTURE ADT

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GREATER THAN 16000 FUTURE ADT - WITHIN URL

NOTES:

- 1. THE STRUCTURAL ROAD SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT, AND IN NO CASE SHALL THE ZONE OF COMPACTION BE LESS THAN 2.5-FEET IN THICKNESS. THE ROAD SECTION SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO CONSTRUCTION.
- 2. TYPICAL SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER

CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

277772 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).

- 3. CUT AND FILL SLOPES SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 4. ATTACHED OR DETACHED SIDEWALK TYPE AND WIDTH PER STANDARD DRAWING C-4 OR AS REQUIRED BY THE PROJECT CONDITIONS OF APPROVAL OR AREA SPECIFIC PLAN.
- 5. OTHER FACILITIES SUCH AS LANDSCAPING, TRANSIT STOP FACILITIES, PEDESTRIAN, EQUESTRIAN, AND BICYCLE FACILITIES MAY BE REQUIRED BY THE DESIGN STANDARDS.
- LANDSCAPE, IRRIGATION, AND MAINTENANCE OF MEDIANS AND PARKWAYS SHALL BE ADDRESSED IN THE APPROVED PROJECT PLANS. A LOCAL FUNDING SOURCE MUST BE IDENTIFIED.
- 7. WHERE APPLICABLE, ALL IMPROVEMENTS SHALL BE CONSISTENT WITH THE RESPECTIVE COMMUNITY DESIGN PLAN AS ADOPTED BY THE BOARD OF SUPERVISORS.
- 8. A STRIPING AND SIGNAGE PLAN SHALL BE REQUIRED BY THE DEPARTMENT WHEN BIKE LANES, NO PARKING ZONES, SIGNAGE, AND PAVEMENT MARKINGS ARE A REQUIRED COMPONENT OF THE IMPROVEMENTS.

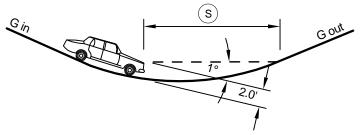
TYPICAL COMMERCIAL-INDUSTRIAL
URBAN STREETS WITHIN URL
GREATER THAN 16,000 FUTURE ADT

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REFERENCE: 1988 STATE HIGHWAY DESIGN MANUAL FIGURE 201.5

L = CURVE LENGTH IN FEET

A = ALGEBRAIC GRADE DIFFERENCE, G out% - Gin%

S = SIGHT DISTANCE IN FEET

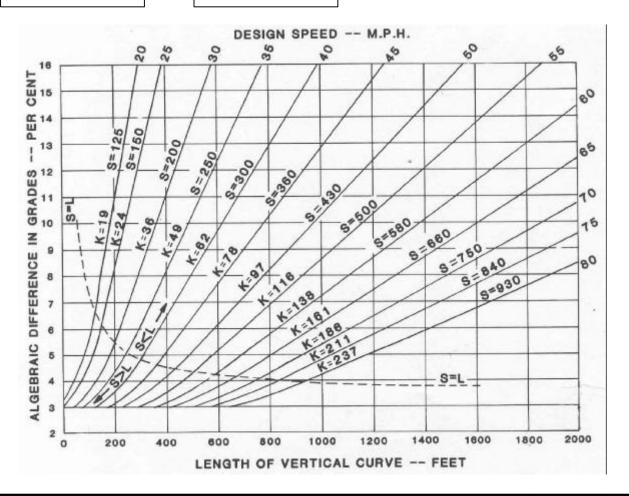
V = DESIGN SPEED IN M.P.H. FOR "S"

K = DISTANCE IN FEET REQUIRED TO ACHIEVE A 1 % CHANGE IN GRADE.

K VALUE SHOWN IS VALID WHEN S<L

WHEN S>L

$$L = 2S - \frac{400 + 3.5S}{A}$$

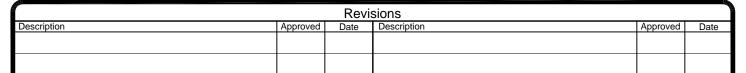


SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
STOPPING SIGHT DISTANCE ON
SAG VERTICAL CURVES

Scale: Issued: Aug. 2006

Drawing No:

A-4



HEIGHT OF EYE - 3.5 FEET HEIGHT OF OBJECT - 0.50 FEET. REFERENCE: 1988 STATE HIGHWAY DESIGN MANUAL FIGURE 201.4



L = CURVE LENGTH IN FEET

A = ALGEBRAIC GRADE DIFFERENCE, G out% - G in%

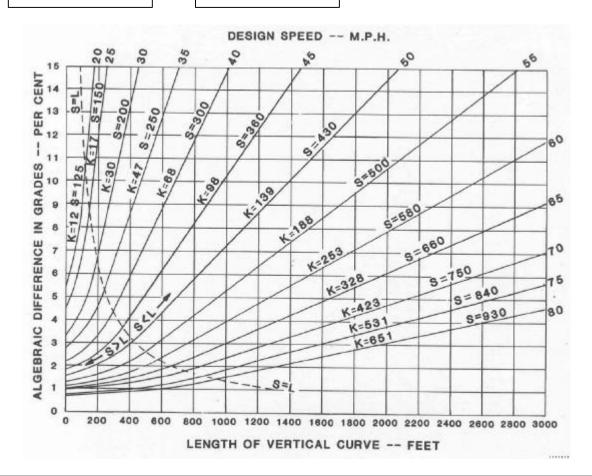
S = SIGHT DISTANCE IN FEET

V = DESIGN SPEED IN M.P.H. FOR "S"

K = DISTANCE IN FEET REQUIRED TO ACHIEVE A 1 % CHANGE IN GRADE.

K VALUE SHOWN IS VALID WHEN S<L

WHEN S>L
$$L = 2S - \frac{1329}{A}$$



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
STOPPING SIGHT DISTANCE ON
CREST VERTICAL CURVES

Scale: Issued:

Aug. 2006

Drawing No:

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| FOR RURAL ROADS - LESS THAN 35 MPH | | | | | | | |
|------------------------------------|------------------------|--|--|--|--|--|--|
| CURVE RADIUS - FEET | SUPER-ELEVATION - % | | | | | | |
| Under 500 | +4% | | | | | | |
| 500-1000 | +3% | | | | | | |
| 1000-5000 | +2% | | | | | | |
| Over 5000 | Standard crown section | | | | | | |

| FOR RURAL ROADS - 35 MPH to 45 MPH | | | | | |
|------------------------------------|------------------------|--|--|--|--|
| CURVE RADIUS - FEET | SUPER-ELEVATION - % | | | | |
| Under 600 | +6% | | | | |
| 600-1000 | +5% | | | | |
| 1000-1500 | +4% | | | | |
| 1500-2000 | +3% | | | | |
| 2000-7000 | +2% | | | | |
| Over 7000 | Standard crown section | | | | |

| FOR RURAL ROADS - C | VER 45 MPH |
|---------------------|------------------------|
| CURVE RADIUS - FEET | SUPER-ELEVATION - % |
| Under 1100 | +10% |
| 1100-1350 | +9% |
| 1350-1600 | +8% |
| 1600-1900 | +7% |
| 1900-2200 | +6% |
| 2200-2700 | +5% |
| 2700-3500 | +4% |
| 3500-4500 | +3% |
| 4500-20000 | +2% |
| Over 20000 | Standard crown section |

- 1. THIS TABLE CONTAINS THE STANDARD RADII AND SPEEDS FOR THE USE OF SUPERELEVATIONS ON RURAL COUNTY ROADS. SUPER-ELEVATIONS ARE NOT ALLOWED ON URBAN COUNTY STREETS.
- 2. SUPERELEVATIONS GREATER THAN 10% ARE NOT ALLOWED WITHOUT THE APPROVAL OF THE DEPARTMENT.
- 3. WHEN USING SUPER-ELEVATIONS, THE DESIGN SHALL BE BASED ON THE CALTRANS HIGHWAY DESIGN MANUAL WHICH PROVIDES INFORMATION ON HORIZONTAL AND VERTICAL ALIGNMENTS, TRANSITIONS, THE AXIS OF ROTATION, DRAINAGE AND OTHER PERTINENT INFORMATION.
- 4. SUPERELEVATION DIAGRAMS SHALL BE PROVIDED ON THE APPROVED PLANS.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
SUPER-ELEVATION ON

HORIZONTAL CURVES

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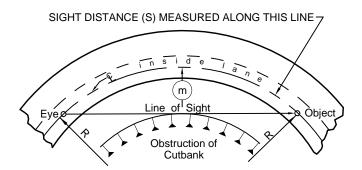
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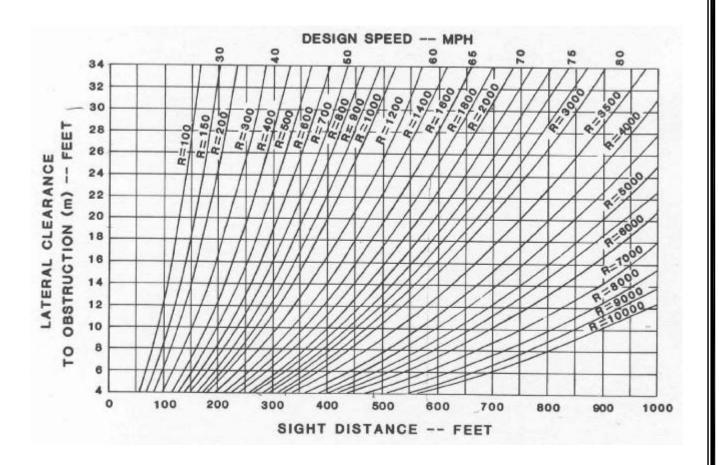
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REFERENCE: 1988 STATE HIGHWAY DESIGN MANUAL FIGURE 201.6



HEIGHT OF EYE = 3.50. HEIGHT OF OBJECT = 0.50 FEET LINE OF SIGHT IS 2.0 FEET ABOVE ϕ INSIDE LANE AT POINT OF OBSTRUCTION.

S = SIGHT DISTANCE R = RADIUS OF CL INSIDE LANE IN FEET m = DISTANCE FROM CL INSIDE LANE IN FEET V = DESIGN SPEED FOR "S" IN MPH



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
STOPPING SIGHT DISTANCE ON
HORIZONTAL CURVES

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VERTICAL CLEAR ZONE

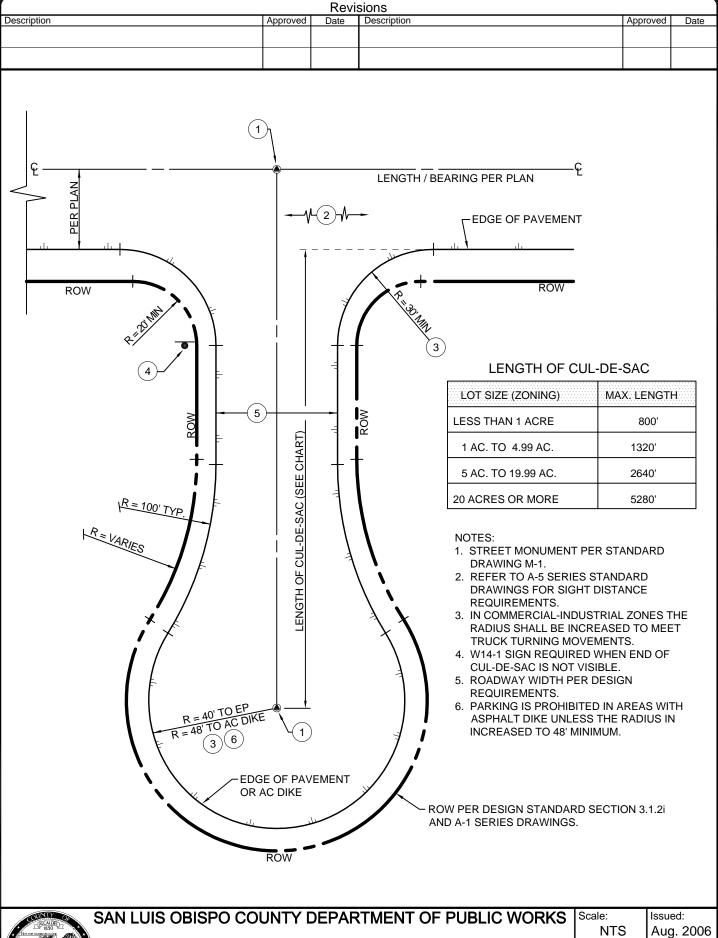
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
SIGHT DISTANCE CONTROL AREAS

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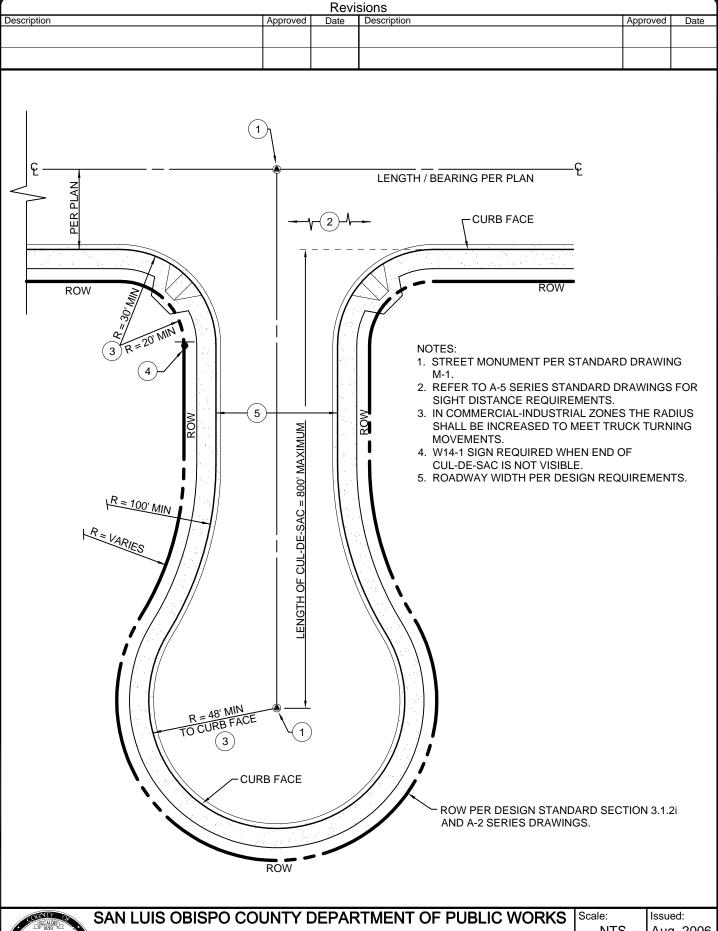


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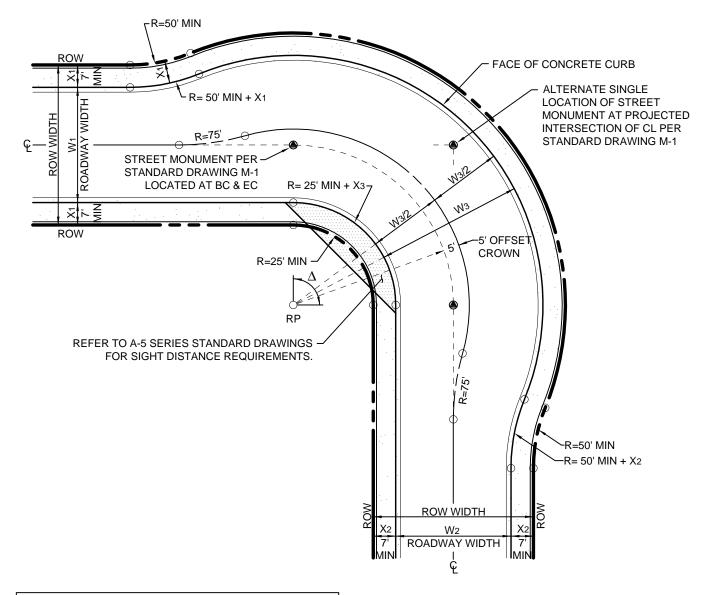
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- 1. KNUCKLES SHALL ONLY BE ALLOWED IN URBAN AREAS.
- 2. KNUCKLE USE IS LIMITED TO ADT<500, DESIGN SPEEDS OF 25 MPH OR LESS, <u>AND</u> WITH PRIOR APPROVAL OF THE DEPARTMENT.
- 3. UNDER NO CIRCUMSTANCES SHALL Δ BE GREATER THAN 90°.
- 4. IN COMMERCIAL-INDUSTRIAL ZONES THE DEPARTMENT MAY REQUIRE THAT ALL RADII SHALL BE ADJUSTED BY THE DESIGN ENGINEER TO MEET TRUCK TURNING MOVEMENTS.



LAYOUT NOTES:

W₃ = THE GREATER OF THE ROAD WIDTHS OF W₁ OR W₂ + 10'

X3 = THE GREATER OF THE ROW WIDTHS OF X1 OR X2

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

TYPICAL KNUCKLE

Scale:

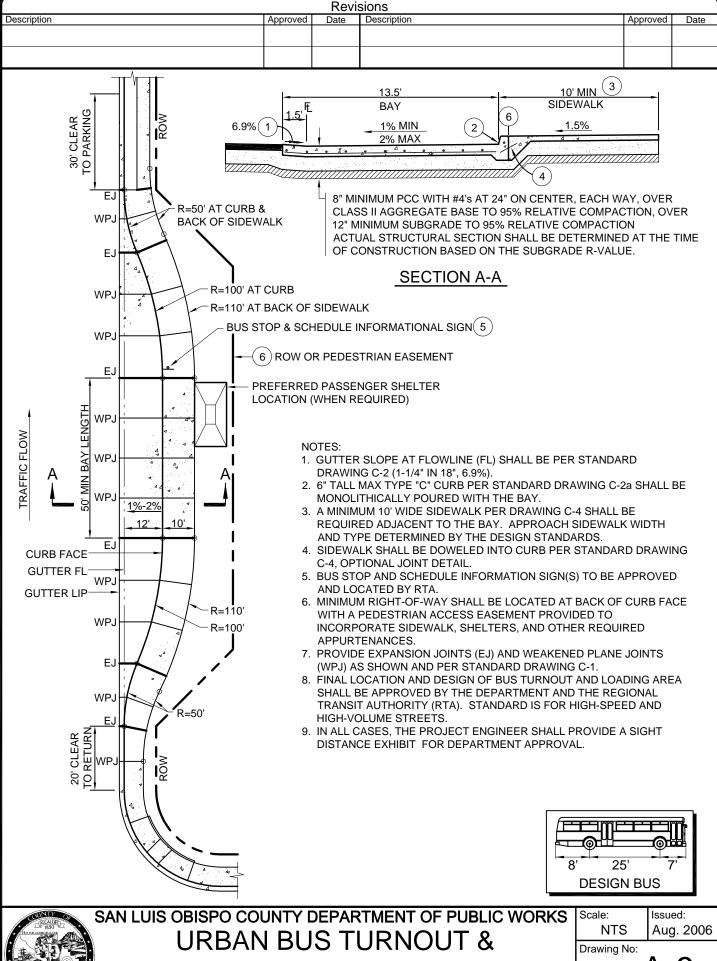
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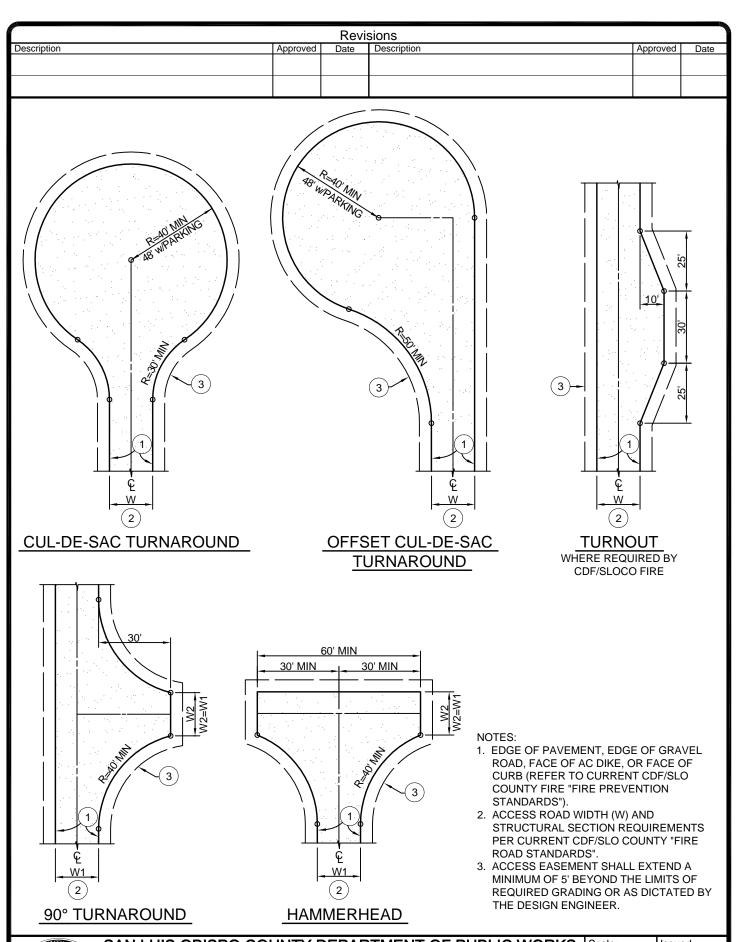
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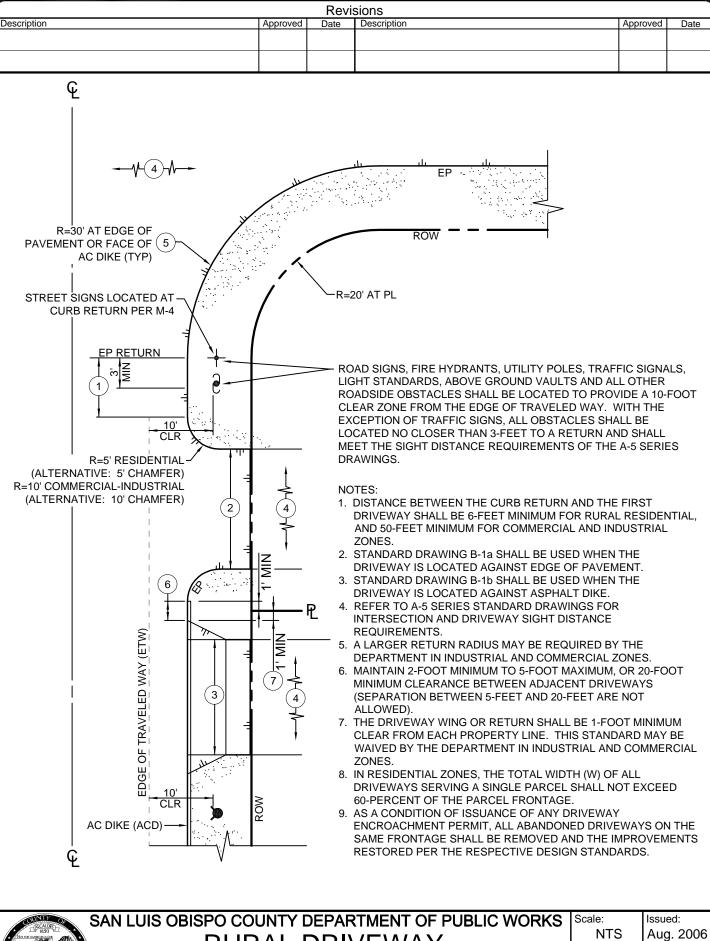


SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
TYPICAL FIRE ACCESS TURN
AROUND STANDARDS

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RURAL DRIVEWAY

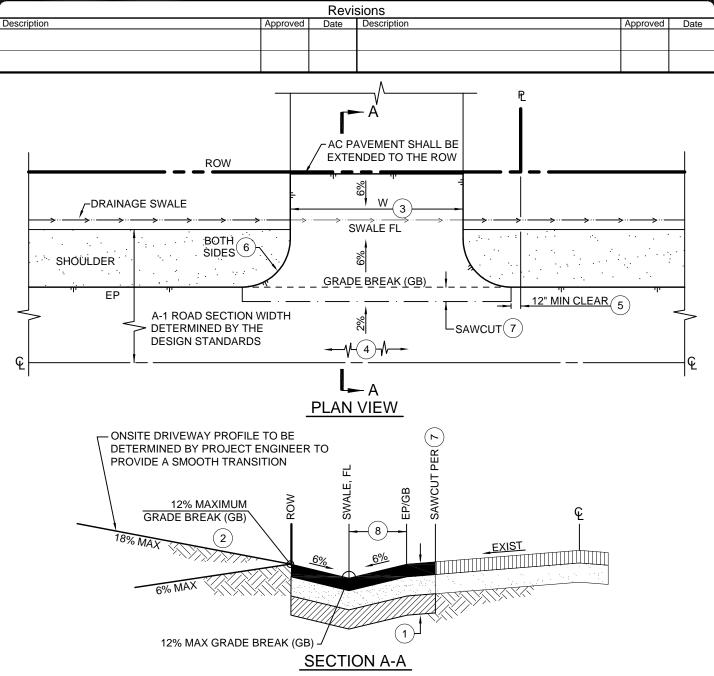
LAYOUT STANDARDS

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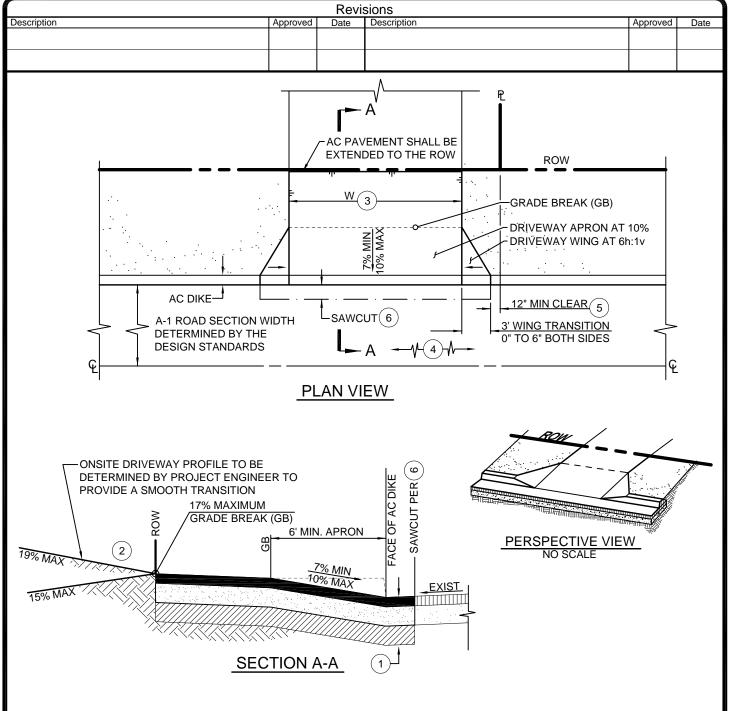
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- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- 2. OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- 3. RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET CDF/FIRE REGULATIONS.
- 4. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- 5. THE END OF DRIVEWAY RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- 6. THE DRIVEWAY RETURN SHALL HAVE A RADIUS OF 5-FEET FOR RESIDENTIAL (ALTERNATIVE: 5-FOOT CHAMFER), AND A RADIUS OF 10-FEET FOR COMMERCIAL-INDUSTRIAL (ALTERNATIVE: 10-FOOT CHAMFER).
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 OR R-1a.
- 8. DISTANCE TO MATCH ROADSIDE DRAINAGE SWALE PER SERIES A-1 DRAWING REQUIREMENTS.



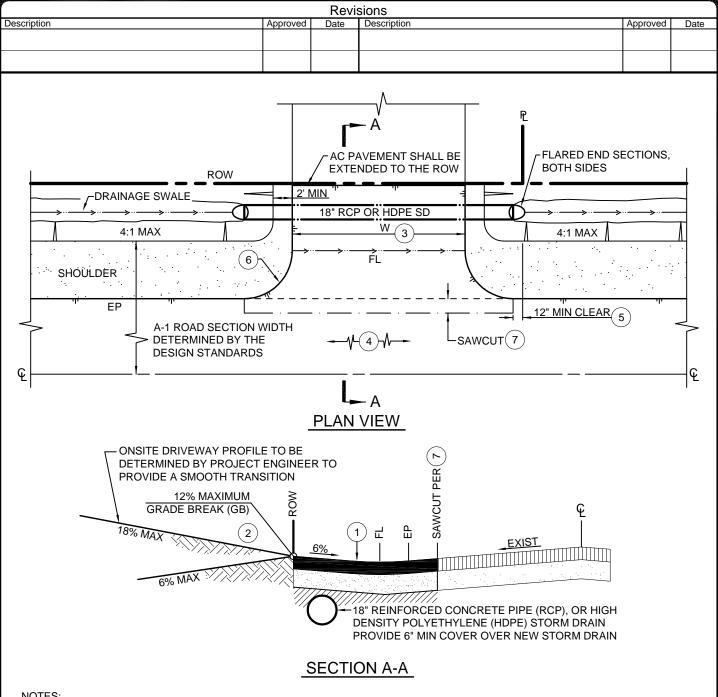
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- 1. WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- 2. OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- 3. RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET CDF/FIRE REGULATIONS.
- 4. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- 5. THE DRIVEWAY WING SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- 6. FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 OR R-1a.



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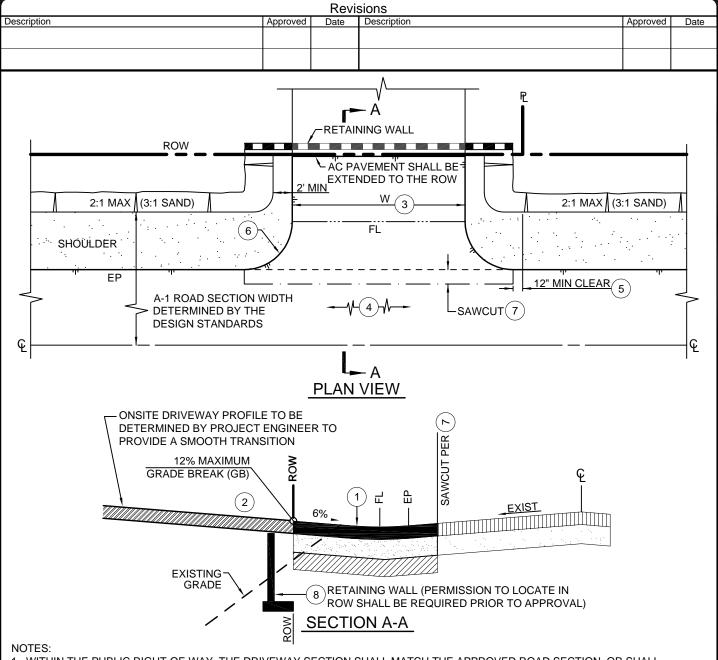


- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
- 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- 2. OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- 3. RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET CDF/FIRE REGULATIONS.
- REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- 5. THE END OF DRIVEWAY RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- 6. THE DRIVEWAY RETURN SHALL HAVE A RADIUS OF 5-FEET FOR RESIDENTIAL (ALTERNATIVE: 5-FOOT CHAMFER), AND A RADIUS OF 10-FEET FOR COMMERCIAL-INDUSTRIAL (ALTERNATIVE: 10-FOOT CHAMFER).
- 7. FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 OR R-1a.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS RURAL RESIDENTIAL DRIVEWAY TYPE 3: ASPHALT DRIVEWAY WITH CULVERT (PRIOR DEPARTMENT APPROVAL REQUIRED)

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1 of 1

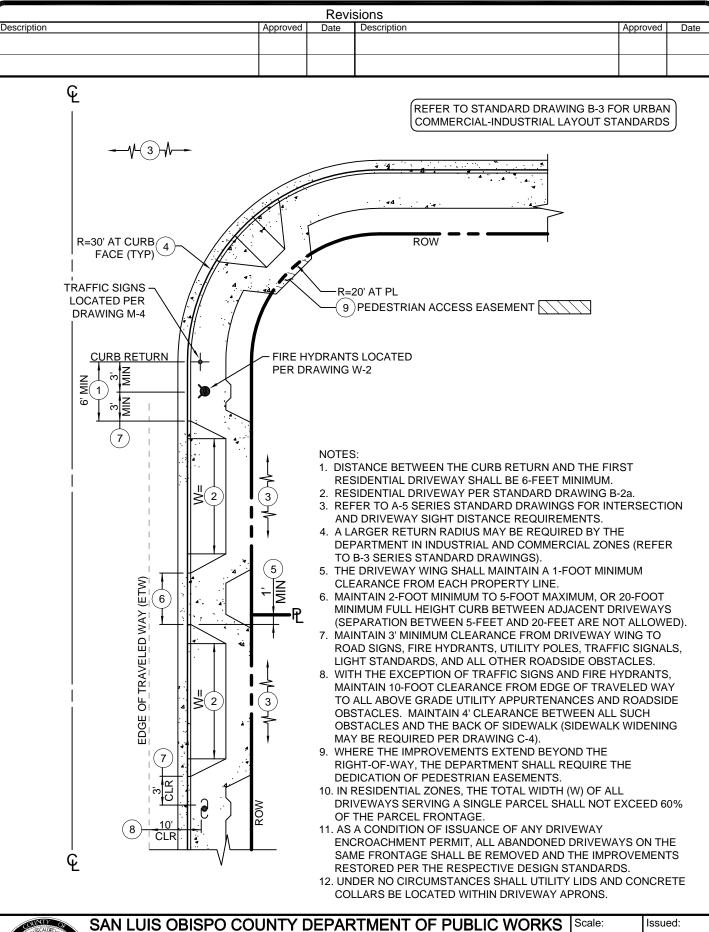


- WITHIN THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY SECTION SHALL MATCH THE APPROVED ROAD SECTION, OR SHALL MATCH THE EXISTING ROAD SECTION, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER
 - CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- OUTSIDE THE PUBLIC RIGHT-OF-WAY, THE DRIVEWAY STRUCTURAL SECTION SHALL BE DETERMINED BY THE PROJECT ENGINEER AND SHALL BE IN COMPLIANCE WITH CDF/FIRE REGULATIONS.
- 3. RESIDENTIAL DRIVEWAY WIDTH SHALL BE 10' MINIMUM TO 20' MAXIMUM, COMMERCIAL-INDUSTRIAL DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM TO 35-FEET MAXIMUM. ALL DRIVEWAYS SHALL MEET CDF/FIRE REGULATIONS.
- 4. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- 5. THE END OF DRIVEWAY RETURN SHALL BE 1-FOOT MINIMUM CLEAR FROM THE PROPERTY LINE.
- 6. THE DRIVEWAY RETURN SHALL HAVE A RADIUS OF 5-FEET FOR RESIDENTIAL (ALTERNATIVE: 5-FOOT CHAMFER), AND A RADIUS OF 10-FEET FOR COMMERCIAL-INDUSTRIAL (ALTERNATIVE: 10-FOOT CHAMFER).
- 7. FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-1 OR R-1a.
- 8. IF RETAINING WALL ARE REQUIRED TO BE LOCATED IN THE RIGHT-OF-WAY THE FOLLOWING SHALL APPLY:
 - A. PRIOR APPROVAL SHALL BE GRANTED BY THE DEPARTMENT.
 - B. THE RETAINING WALL SHALL BE ENGINEERED. PLANS AND CALCULATIONS SHALL BE SUBMITTED FOR DEPARTMENT APPROVAL.



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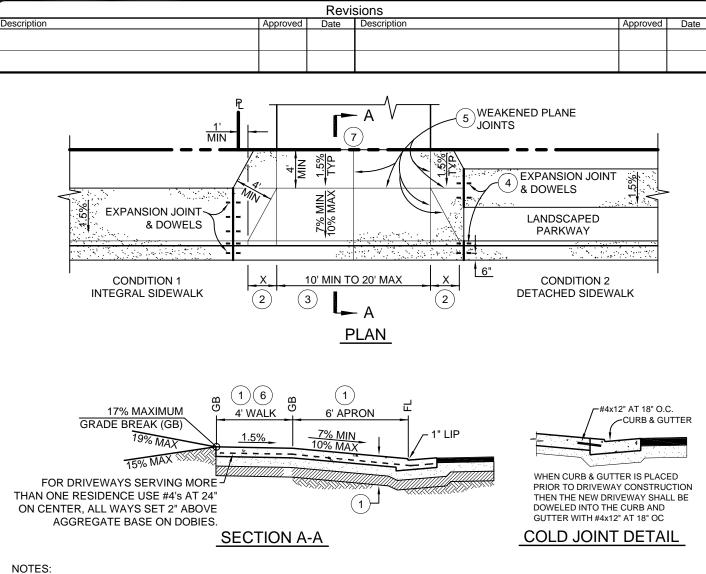
URBAN DRIVEWAY

LAYOUT STANDARDS

Aug. 2006 NTS

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- 1. CONCRETE DRIVEWAY SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO THE DESIGN STANDARDS. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
 - oxedigg 6-INCH MIN PORTLAND CEMENT CONCRETE, OVER
 - $^{\square}$ 6" MIN CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 7/////// 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 6" OF AGGREGATE BASE MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.

A COURSE BROOM FINISH TRANSVERSE TO THE LINE OF TRAFFIC SHALL BE USED ON THE APRON AND WINGS. THE 4-FOOT WIDE SIDEWALK SHALL HAVE A LIGHT BROOM FINISH PARALLEL TO THE LINE OF TRAFFIC.

- 2. X = 3-FEET (6h:1v) EXCEPT FOR CURB HEIGHTS OVER 8-INCHES WHERE 4h:1v SLOPES SHALL BE USED ON CURB SLOPE.
- 3. W = DRIVEWAY WIDTH SHALL BE 10-FEET MINIMUM AND 20-FEET MAXIMUM FOR RESIDENTIAL ACCESS.
- 4. EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AS SHOWN. 1/2"Øx18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- 5. WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED AS SHOWN AND PER STANDARD DRAWING C-1.
- 6. THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, THE ACQUISITION OF PEDESTRIAN EASEMENTS SHALL BE REQUIRED BY THE DEPARTMENT.
- 8. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- 9. FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-2 OR R-2a.
- 10. THE HIGH VOLUME DRIVEWAY STANDARD B-3b SHALL BE USED AT ENTRANCES TO RESIDENTIAL DRIVEWAYS THAT EXCEED 200 VEHICLES PER PM PEAK HOUR AND EXIT ONTO AN ARTERIAL ROAD. THE DEPARTMENT RESERVES THE RIGHT TO REQUIRE THE USE OF A HIGH VOLUME DRIVEWAY BASED ON OTHER EXTENUATING CONDITIONS.
- 11. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

URBAN DRIVEWAY RESIDENTIAL DRIVEWAY

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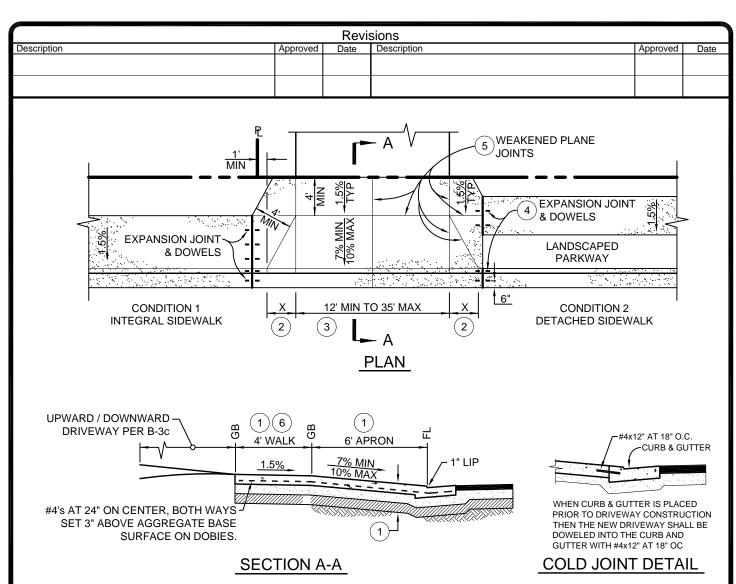
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| | | | | | - |
| € - 1/4-1/- | | | REFER TO STANDARD DRAWING B-1 FO COMMERCIAL-INDUSTRIAL LAYOUT ST. | | |
| R=30' AT CURB FACE (TYP) TRAFFIC SIGNS LOCATED PER DRAWING M-4 CURB RETURN NUM 1 | | PEI YDRANT RAWING | ROW 20' AT PL DESTRIAN ACCESS EASEMENT S LOCATED W-2 | | |
| EDGE OF TRAVELED WAY (ETW) W W W W W W W W W W W W | MIN 9 (4) W- (4) | NOTES 1. DIS' SHA 2. COI B-3: 3. HIG 4. REF ANI 5. A L. DEF 6. THE MIN STA ANI 7. MAI ROA LIG 9. WIT MAI TO OBS OBS MA 10. AS ENG SAM RES 11. UN | TANCE BETWEEN AN INTERSECTION AND THE FIR ALL BE 50-FEET MINIMUM. MMERCIAL-INDUSTRIAL DRIVEWAY PER STANDARI | D DRAWING B-3b. TERSECTION IE ES1-FOOT THIS INDUSTRIAL 20-FOOT RIVEWAYS DT ALLOWED WING TO FIC SIGNALS ACLES. IYDRANTS, VELED WAY D ROADSIDE EN ALL SUCH K WIDENING AYS ON THE ROVEMENTS DS. | N L S, :- H |
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COMMERCIAL-INDUSTRIAL DRIVEWAY Drawing No: LAYOUT STANDARDS



- 1. CONCRETE DRIVEWAY SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO THE DESIGN STANDARDS. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
 - 8-INCH MINIMUM PORTLAND CEMENT CONCRETE REINFORCED WITH #4's AT 24" OC BOTH WAYS, OVER
 - 6" MIN CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 6-INCHES OF AGGREGATE BASE MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.

A COURSE BROOM FINISH TRANSVERSE TO THE LINE OF TRAFFIC SHALL BE USED ON THE APRON AND WINGS. THE 4-FOOT WIDE SIDEWALK SHALL HAVE A LIGHT BROOM FINISH PARALLEL TO THE LINE OF TRAFFIC.

- 2. X = 3-FEET (6h:1v) EXCEPT FOR CURB HEIGHTS OVER 8-INCHES WHERE 4h:1v SLOPES SHALL BE USED ON CURB SLOPE.
- 3. W = DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM AND 35-FEET MAXIMUM FOR COMMERCIAL-INDUSTRIAL ACCESS.
- 4. EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AS SHOWN. 1/2"Øx18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- 5. WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED AS SHOWN AND PER STANDARD DRAWING C-1.
- 6. THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- 7. WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, THE ACQUISITION OF PEDESTRIAN EASEMENTS SHALL BE REQUIRED BY THE DEPARTMENT.
- 8. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- 9. FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-2 OR R-2a.
- 10. THE HIGH VOLUME DRIVEWAY STANDARD B-3b SHALL BE USED AT ENTRANCES THAT EXCEED 200 VEHICLES PER PM PEAK HOUR AND EXIT ONTO AN ARTERIAL ROAD. THE DEPARTMENT RESERVES THE RIGHT TO REQUIRE THE USE OF A HIGH VOLUME DRIVEWAY BASED ON OTHER EXTENUATING CONDITIONS.
- 11. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

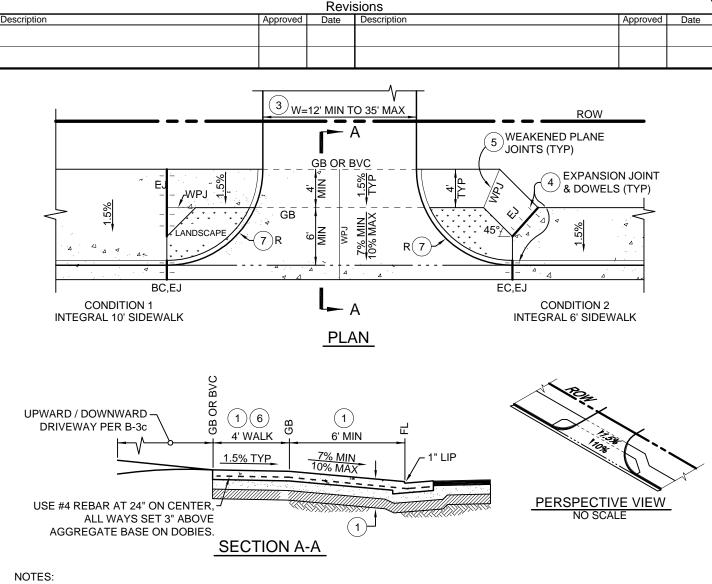
COMMERCIAL-INDUSTRIAL DRIVEWAY

STANDARD DRIVEWAY

Scale: NTS Issued: Aug. 2006

Drawing No:

<u>B-3a</u>



- 1. CONCRETE DRIVEWAY SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO THE DESIGN STANDARDS. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE. TYPICAL SECTION SHALL BE:
 - 8-INCH MINIMUM PORTLAND CEMENT CONCRETE REINFORCED WITH #4's AT 24" OC BOTH WAYS, OVER
 - 6" MIN CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER
 - [[[]]] 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
 - IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 6-INCHES OF AGGREGATE BASE MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.
 - A COURSE BROOM FINISH TRANSVERSE TO THE LINE OF TRAFFIC SHALL BE USED ON THE APRON AND WINGS. THE 4-
- 2. DIMENSIONS "W" & "R" AND PARKWAY WIDTH SHALL BE SHOWN ON PLANS.
- 3. W = DRIVEWAY WIDTH SHALL BE 12-FEET MINIMUM AND 35-FEET MAXIMUM FOR COMMERCIAL-INDUSTRIAL ACCESS.
- 4. EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AS SHOWN. 1/2"Øx18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- 5. WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED AS SHOWN AND PER STANDARD DRAWING C-1.
- 6. THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- 7. RADIUS (R) EQUALS PARKWAY WIDTH BUT SHALL NOT BE LESS THAN 10 FEET.
- 8. WHERE THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY, THE ACQUISITION OF PEDESTRIAN EASEMENTS SHALL BE REQUIRED BY THE DEPARTMENT.
- 8. REFER TO A-5 SERIES STANDARD DRAWINGS FOR DRIVEWAY SIGHT DISTANCE REQUIREMENTS.
- FOR NEW DRIVEWAY CONSTRUCTION AGAINST EXISTING ROADWAY, SAWCUT TO REMOVE EXISTING ROADWAY AND RECONSTRUCT PER STANDARD DRAWINGS R-2 OR R-2a.
- 10. THIS HIGH VOLUME DRIVEWAY STANDARD SHALL BE USED AT ENTRANCES THAT EXCEED 200 VEHICLES PER PM PEAK HOUR AND EXIT ONTO AN ARTERIAL ROAD, OR WHERE REQUIRED BY THE DEPARTMENT.
- 11. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN DRIVEWAY APRONS.

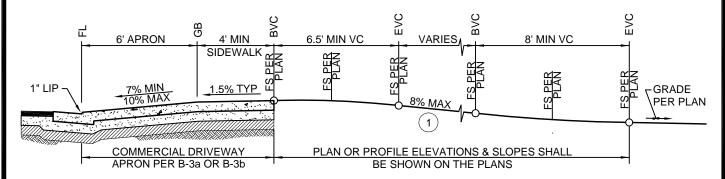


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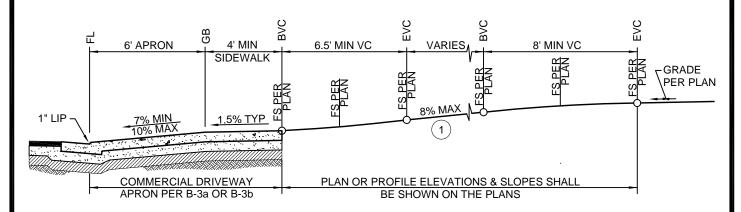
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DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

NOTES:

- THE MAXIMUM SLOPE OF 8% SHALL NOT BE EXCEEDED ALONG ANY LONGITUDINAL PORTION OF THE NEW DRIVEWAY. THE SLOPE MAY BE INCREASED TO 12% WITH SPECIAL CONSTRUCTION TECHNIQUES AND PRIOR DEPARTMENT APPROVAL.
- THE CROSS SLOPE OF THE 4-FOOT WIDE SIDEWALK SHALL BE 1.5% (3/16-INCH PER FOOT), BUT NOT EXCEED 2% (1/4-INCH PER FOOT). MINIMUM SIDEWALK WIDTH FOR CLEAR PASSAGE SHALL BE MAINTAINED (NO OBSTACLES LOCATED WITHIN).
- 3. THIS STANDARD IS INTENDED TO BE USED IN CONJUNCTION WITH STANDARD DRAWINGS B-3a AND B-3b.

ABBREVIATIONS:

BVC BEGIN VERTICAL CURVE EVC END VERTICAL CURVE

FL FLOWLINE

FS FINISHED SURFACE (ELEVATION)

GB GRADE BREAK

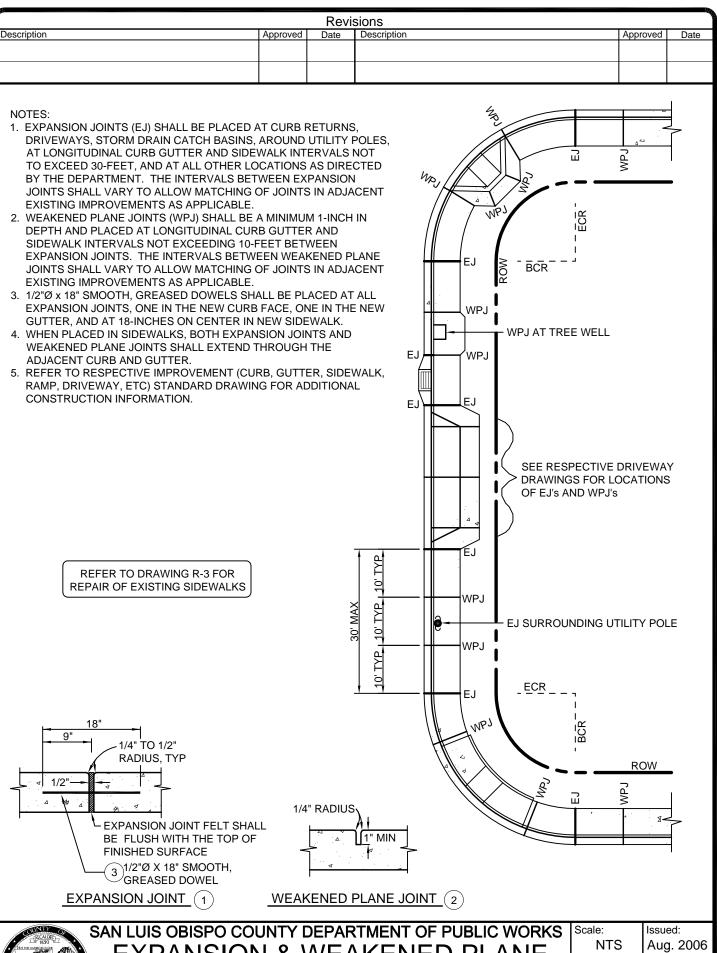
VC VERTICAL CURVE

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
COMMERCIAL-INDUSTRIAL DRIVEWAY
UPWARD / DOWNWARD DRIVEWAY

Scale: Issued: Aug. 2006

Drawing No:

B-3c

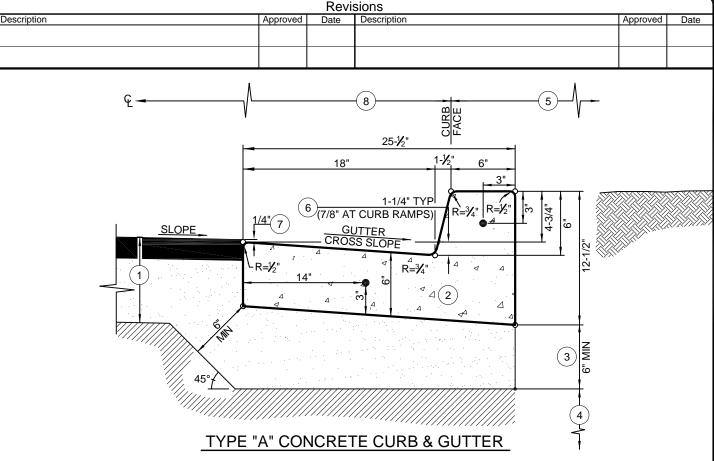


EXPANSION & WEAKENED PLANE

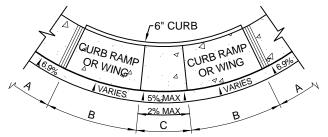
JOINT REQUIREMENTS

NTS Aug. 2006
Drawing No:

1 of 1



- 1. ROADWAY STRUCTURAL SECTION PER PLAN OR AS EXISTING.
- 2. CONCRETE CURB OR CURB AND GUTTER SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO THE DESIGN STANDARDS. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
- 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION OR MATCH BASE THICKNESS REQUIREMENT FOR NEW OR EXISTING ROAD SECTION, WHICHEVER IS GREATEST.
- 4. 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- 5. SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
- 6. GUTTER CROSS SLOPE SHALL NOT EXCEED 5% ACROSS CURB RAMPS PER DETAIL BELOW.
- 7. THE ROADWAY FINISHED SURFACE SHALL BE 1/4" ABOVE THE GUTTER LIP.
- 8. PAVEMENT WIDTH MEASURED FROM ROAD CENTERLINE TO THIS POINT.
- 9. 1/2"Ø x 18" LONG GREASED SMOOTH DOWELS () SHALL BE CONSTRUCTED AT ALL EXPANSION JOINTS AND CONSTRUCTION JOINTS, REFER TO STANDARD DRAWING C-1.
- 10. EXPANSION JOINTS SHALL BE CONSTRUCTED AT 30-FEET MAXIMUM INTERVALS, AT ENDS OF ALL CURB RETURNS, AND EACH SIDE OF DRIVEWAY DEPRESSIONS PER STANDARD DRAWING C-1. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE
- 11. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 10-FEET MAXIMUM INTERVALS PER STANDARD DRAWING C-1. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE.
- 12. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN THE CURB & GUTTER.



NOTES:

- A. GUTTER CROSS SLOPE = 1-1/4" IN 18" = 6.9%
- B. GUTTER CROSS SLOPE TRANSITION ZONE (VARIES)
- C. GUTTER CROSS SLOPE = 7/8" IN 18" = 4.9% (5% MAX) LONGITUDINAL SLOPE = 2% MAX

TYPICAL GUTTER TRANSITION AT CURB RAMP

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

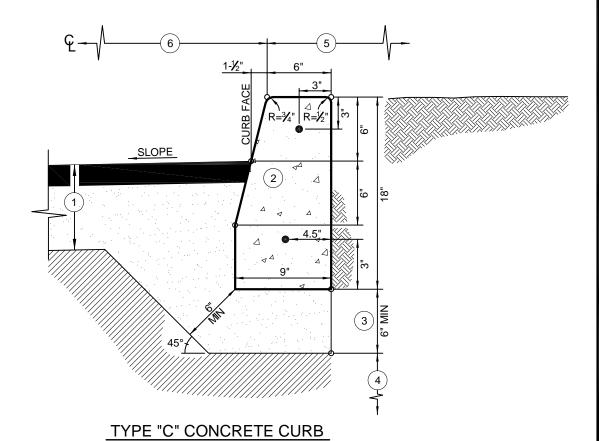
TYPE "A" CONCRETE **CURB & GUTTER**

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- 1. ROADWAY STRUCTURAL SECTION PER PLAN OR AS EXISTING.
- 2. CONCRETE CURB OR CURB AND GUTTER SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO THE DESIGN STANDARDS. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
- 3. 6" MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION OR MATCH BASE THICKNESS REQUIREMENT FOR NEW OR EXISTING ROAD SECTION, WHICHEVER IS GREATEST.
- 4. 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION.
- 5. SUBGRADE AND AGGREGATE BASE COMPACTION REQUIREMENTS SHALL EXTEND TO THE BACK OF CURB OR TO THE BACK OF ATTACHED SIDEWALK (WHICHEVER CONDITION IS APPLICABLE).
- 6. PAVEMENT WIDTH MEASURED FROM ROAD CENTERLINE TO THIS POINT.
- 7. 1/2"Ø x 18" LONG GREASED SMOOTH DOWELS (♠) SHALL BE CONSTRUCTED AT ALL EXPANSION JOINTS PER STANDARD DRAWING C-1.
- 8. EXPANSION JOINTS SHALL BE CONSTRUCTED AT 30-FEET MAXIMUM INTERVALS, AT ENDS OF ALL CURB RETURNS, AND EACH SIDE OF DRIVEWAY DEPRESSIONS. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE PER STANDARD DRAWING C-1.
- 9. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 10-FEET MAXIMUM INTERVALS PER STANDARD DRAWING C-1. THE INTERVALS BETWEEN EXPANSION JOINTS SHALL VARY TO ALLOW MATCHING OF JOINTS ADJACENT EXISTING IMPROVEMENTS WHEN APPLICABLE.
- 10. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN THE TOP OF CURB.

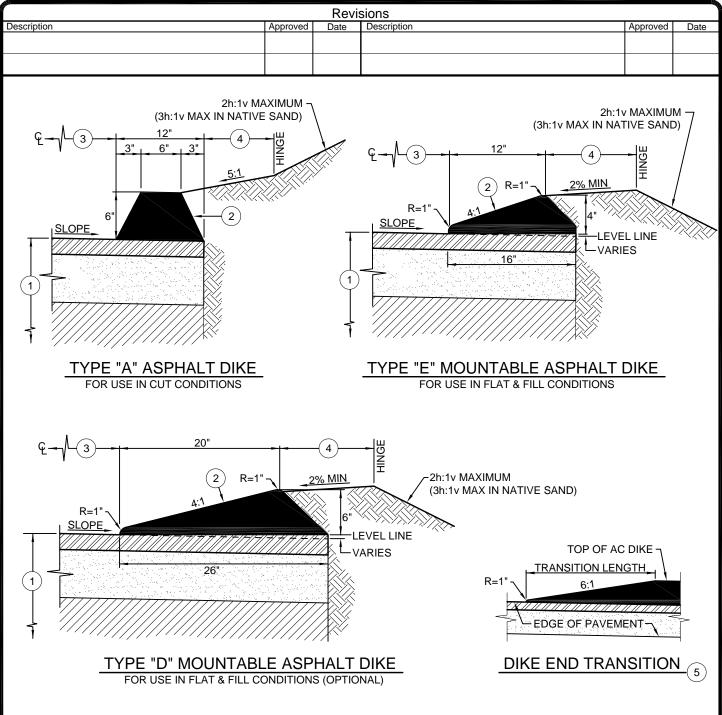
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS TYPE "C" CONCRETE CURB

Scale: Issued: Aug. 2006

Drawing No:

C-2a

Sheet No: 1 OF 1



- 1. ROADWAY STRUCTURAL SECTION THICKNESS PER PLAN.
- ASPHALT CONCRETE DIKE SHALL BE REQUIRED PER THE DESIGN STANDARDS (REFER TO A-1 SERIES STANDARD DRAWINGS). USE PG 70-10 ASPHALT BINDER FOR ALL ASPHALT CONCRETE DIKE.
- 3. ROADWAY TRAVEL PLUS SHOULDER WIDTH MEASURED FROM ROAD CENTERLINE TO THIS POINT.
- 4. REFER TO A-1 SERIES STANDARD DRAWINGS FOR MINIMUM DISTANCES TO HINGE POINT.
- 5. A 6h:1v DIKE HEIGHT TAPER SHALL BE PROVIDED AT EACH END OF AN AC DIKE.
- 6. ASPHALT DIKE SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER. TYPE "A" DIKE SHALL BE USED WHEN THE ROADWAY IS BELOW EXISTING OR FINISHED SURFACE. TYPE "D" OR "E" DIKE SHALL BE REQUIRED IN CONDITIONS WHERE THE ROADWAY IS ABOVE OR LEVEL WITH EXISTING OR FINISHED SURFACE.
- 7. PRIOR TO PROJECT ACCEPTANCE, ALL DAMAGED ASPHALT DIKE SHALL BE REMOVED AND REPLACED AND A FOG SEAL SHALL BE APPLIED TO BOTH THE REPLACED ASPHALT DIKE AND TO THE REMAINING UNDAMAGED ASPHALT DIKE TO THE LIMITS DETERMINED BY THE DEPARTMENT.

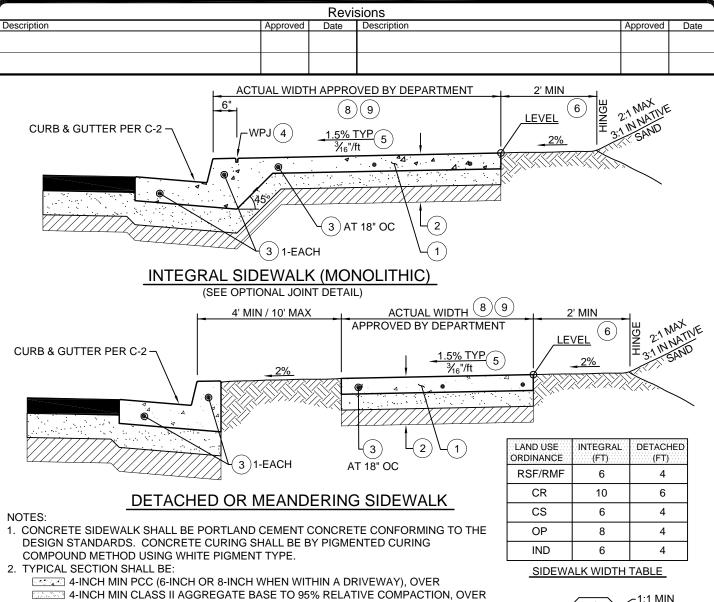
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

ASPHALT DIKES

Scale: Issued: Aug. 2006

Drawing No: C-3

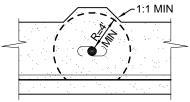
Sheet No: 1 OF 1



22-INCH MIN SUBGRADE TO 95% RELATIVE COMPACTION

IF THE R-VALUE OF THE NATIVE MATERIAL IS 55 OR GREATER THEN THE 4-INCH OF AGGREGATE BASE MAY BE SUBSTITUTED WITH COMPACTED NATIVE MATERIAL.

- 3. EXPANSION JOINTS (EJ) SHALL BE CONSTRUCTED AT LONGITUDINAL INTERVALS NOT EXCEEDING 30-FEET. 1/2"Ø x 18" SMOOTH, GREASED DOWELS SHALL BE PLACED IN THE EJ, ONE IN CURB FACE, ONE IN GUTTER, AND AT 18-INCHES ON CENTER IN SIDEWALKS PER STANDARD DRAWING C-1.
- 4. WEAKENED PLANE JOINTS (WPJ) SHALL BE CONSTRUCTED BETWEEN EXPANSION JOINTS AT LONGITUDINAL INTERVALS NOT EXCEEDING 10-FEET, AND AT 6-INCHES BEHIND THE CURB FACE FOR ATTACHED SIDEWALKS PER STANDARD DRAWING C-1.
- THE CROSS SLOPE OF THE SIDEWALK SHALL NOT EXCEED 2% (1/4-INCH PER 12-INCHES), 1.5% (3/16-INCH PER 12-INCHES) IS RECOMMENDED.
- 6. THE 2-FOOT BENCH IS NOT REQUIRED FOR ADJOINING SLOPES OF 5h:1v OR FLATTER.
- 7. ALTHOUGH THE PROJECT CONDITIONS OF APPROVAL OR THE AREA SPECIFIC PLAN MAY REQUIRE AN ALTERNATIVE SIDEWALK CONFIGURATION, THE CONSTRUCTION SPECIFICATIONS OF THIS STANDARD SHALL APPLY.
- THE SIDEWALK SHALL BE WIDENED WHERE REQUIRED TO ALLOW FOR A 4-FOOT CLEAR PASSAGE AROUND ALL ABOVE GRADE OBSTACLES LOCATED WITHIN THE SIDEWALK.
- WATER PURVEYOR METER BOXES ARE ALLOWED WITHIN THE SIDEWALK PROVIDED THAT ALL LIDS AND LIDS WITH A.M.R. SYSTEMS ARE SET FLUSH WITH THE SIDEWALK.
- 10. ALL UTILITY VAULTS AND LIDS MUST BE LOCATED OUTSIDE OF THE SIDEWALK OR HAVE PRIOR DEPARTMENT APPROVAL FOR LOCATION WITHIN THE SIDEWALK. UTILITY LIDS WITHIN THE SIDEWALK SHALL HAVE A NON-SLIP SURFACE.



SIDEWALK SHALL BE WIDENED BEHIND ALL ABOVE GRADE OBSTACLES TO PROVIDE A 4-FEET MINIMUM CLEARANCE.

SIDEWALK WIDENING DETAIL



WHEN EXTRUDED CURB & GUTTER IS USED EXTRUDING MACHINE MUST BE CAPABLE OF PLACING A DENSE GRADE OF CONCRETE. SIDEWALK PORTION MUST BE PLACE WITHIN 1 HOUR OF EXTRUDED CURB & GUTTER UNLESS OPTIONAL JOINT IS USED.

OPTIONAL JOINT DETAIL

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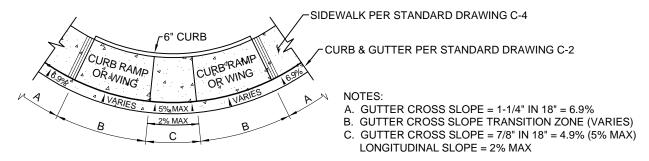
SIDEWALKS

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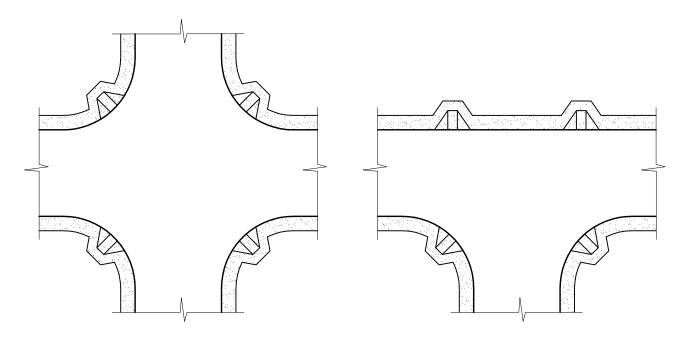
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CURB RAMP NOTES:

- ALL CURB RAMPS FOR NEW CONSTRUCTION, RETROFIT, AND REPLACEMENT SHALL CONFORM TO THE LATEST DEPARTMENT ADOPTED STATE STANDARD PLANS. CONTACT THE DEPARTMENT FOR THE LATEST ADOPTED STANDARD.
- 2. NEW SIDEWALKS AND PATHS SHALL BE PROVIDED WITH CURB RAMPS AT ALL INTERSECTIONS.
- 3. MID-BLOCK CURB RAMPS ARE DISCOURAGED AND SHALL REQUIRE PRIOR DEPARTMENT APPROVAL.
- 4. THE PROJECT ENGINEER SHALL DETAIL EACH CURB RAMP ON THE PLANS. MINIMUM DETAIL REQUIREMENTS SHALL INCLUDE DIMENSIONS, SLOPES, AND SPOT ELEVATIONS.
- 5. THE DEPARTMENT MAY GRANT EXCEPTIONS TO THESE STANDARDS ON AN INDIVIDUAL BASIS. THE DEPARTMENT ADA COORDINATOR SHALL REVIEW AND PROVIDE PRIOR APPROVAL OF ALL EXCEPTIONS.



TYPICAL GUTTER TRANSITION AT CURB RAMP



TYPICAL CURB RAMP PLACEMENT

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CURB RAMPS

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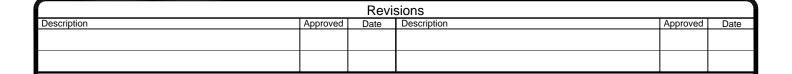
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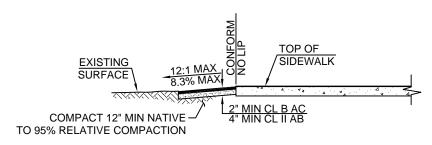
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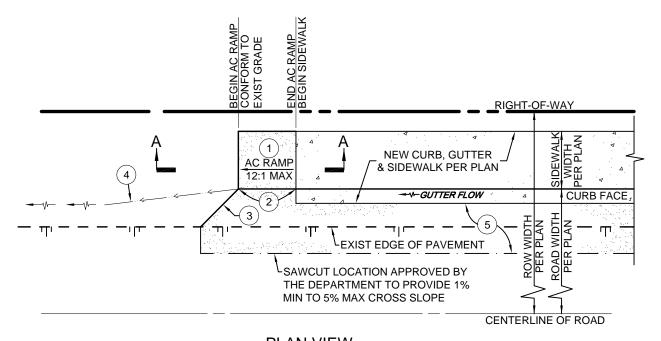
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SECTION A-A: ASPHALT CONCRETE RAMP



PLAN VIEW

NOTES:

FOR USE AT THE END OF NEW SIDEWALK TO PROVIDE A SMOOTH TRANSITION FROM EDGE OF NEW SIDEWALK TO EXISTING GRADE. IF A SMOOTH TRANSITION CANNOT BE ACHIEVED THEN THE DEPARTMENT MAY REQUIRE A SIDEWALK BARRICADE BE CONSTRUCTED PER DRAWING M-3.

- CONSTRUCT NEW ASPHALT CONCRETE RAMP. RAMP SHALL BE 2-INCHES MINIMUM ASPHALT CONCRETE TO 95% RELATIVE COMPACTION, OVER 4-INCHES MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER COMPACTED NATIVE MATERIAL. SLOPE OF RAMP SHALL NOT EXCEED 12:1 (8.33%), RECOMMENDED SLOPE OF 8% MAXIMUM.
- TYPE "A" ASPHALT DIKE PER DRAWING C-1 TAPERED FROM 0-INCHES (FLUSH) TO 6-INCHES TALL TO MATCH EDGE OF NEW CONCRETE CURB.
- 3. CONSTRUCT NEW EDGE OF PAVEMENT TAPER AT 1:1 MINIMUM IN RESIDENTIAL (5:1 MINIMUM IN COMMERCIAL) AREAS TO JOIN EXISTING EDGE OF PAVEMENT (THE DEPARTMENT MAY REQUIRE A LONGER TAPER LENGTH).
- 4. GRADE AND RECOMPACT EXISTING SHOULDER TO PROVIDE A POSITIVE DRAINAGE CONNECTION BETWEEN NEW GUTTER FLOWLINE TO EXISTING SWALE PATH.
- 5. NEW ROADWAY WIDENING, STRUCTURAL SECTION PER PLANS.



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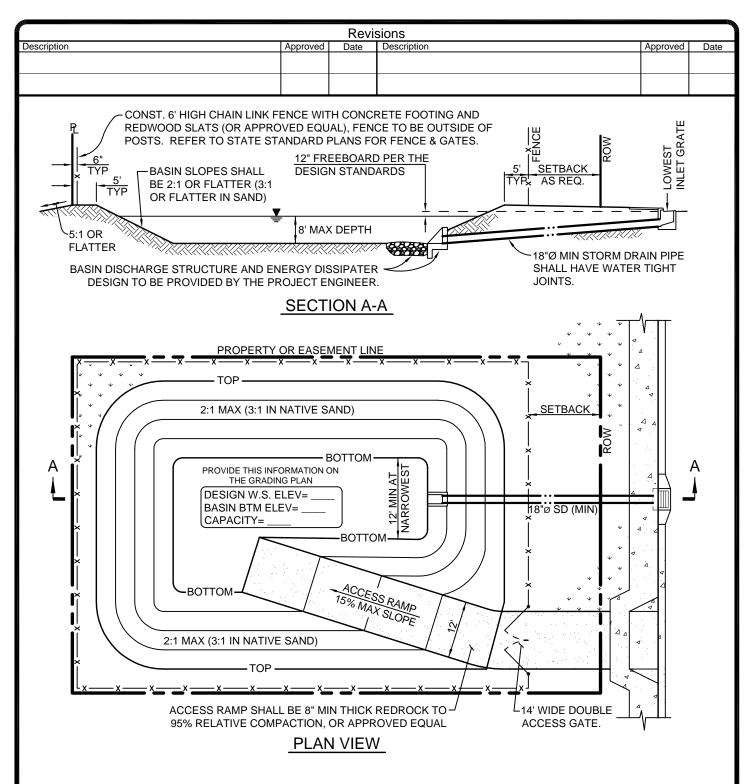
ASPHALT RAMP DETAIL

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Aug. 2006

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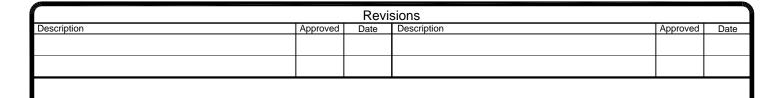


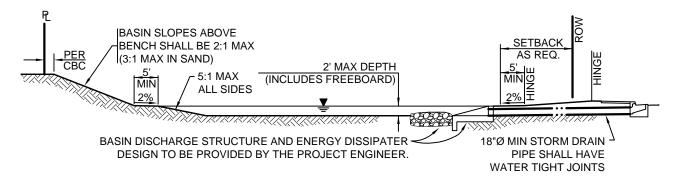
- 1. WHERE DEEP DETENTION BASINS ARE PROPOSED THEY SHALL MEET THE SAME REQUIREMENTS OF THIS STANDARD.
- 2. BASINS MUST FULLY DRAIN WITHIN 7 DAYS OR A PERCOLATION ENHANCEMENT SYSTEM SHALL BE REQUIRED. THE DEPARTMENT MAY ALSO REQUIRE PERCOLATION TESTS AND CERTIFICATION FROM THE PROJECT ENGINEER.
- 3. A BASIN OVERFLOW STRUCTURE TO ACCOMMODATE UP TO A 100-YEAR STORM EVENT SHALL BE DESIGNED WHICH DISCHARGES FLOWS TO THE PUBLIC RIGHT-OF-WAY OR A DEFINED WATER COURSE IN A NON-EROSIVE MANNER.
- 4. THE OVERLAND ESCAPE PATH (NOTE 3) SHALL BE IDENTIFIED ON THE PLANS AND SHOWN TO PROTECT DOWNSTREAM PROPERTIES IN THE EVENT OF BASIN SPILL OR FAILURE.
- 5. ADDITIONAL BASIN AND BASIN LANDSCAPING REQUIREMENTS MAY BE IMPOSED AS PART OF THE DESIGN STANDARDS.
- 6. BASIN LANDSCAPING AND EROSION CONTROL SHALL BE SUBSTANTIALLY ESTABLISHED PRIOR TO PROJECT ACCEPTANCE.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

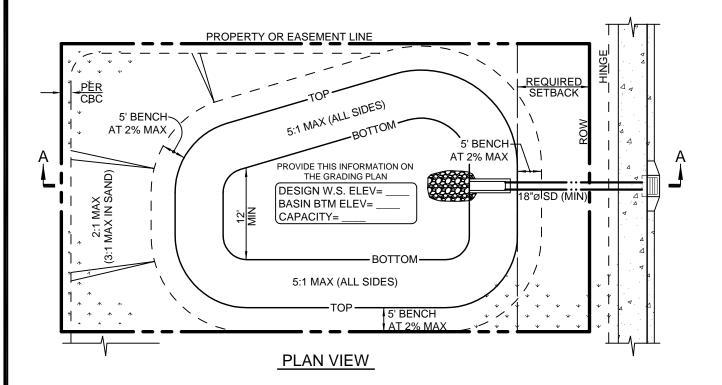
DEEP RETENTION BASIN

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SECTION A-A



NOTES:

- 1. WHERE SHALLOW DETENTION BASINS ARE PROPOSED THEY SHALL MEET THE SAME REQUIREMENTS OF THIS STANDARD.
- 2. BASINS MUST FULLY DRAIN WITHIN 7 DAYS OR A PERCOLATION ENHANCEMENT SYSTEM SHALL BE REQUIRED. THE DEPARTMENT MAY ALSO REQUIRE PERCOLATION TESTS AND CERTIFICATION FROM THE PROJECT ENGINEER.
- A BASIN OVERFLOW STRUCTURE TO ACCOMMODATE UP TO A 100-YEAR STORM EVENT SHALL BE DESIGNED WHICH DISCHARGES FLOWS TO THE PUBLIC RIGHT-OF-WAY OR A DEFINED WATER COURSE IN A NON-EROSIVE MANNER.
- 4. THE OVERLAND ESCAPE PATH (NOTE 3) SHALL BE IDENTIFIED ON THE PLANS AND SHOWN TO PROTECT DOWNSTREAM PROPERTIES IN THE EVENT OF BASIN SPILL OR FAILURE.
- 5. ADDITIONAL BASIN AND BASIN LANDSCAPING REQUIREMENTS MAY BE IMPOSED AS PART OF THE DESIGN STANDARDS.
- 6. BASIN LANDSCAPING AND EROSION CONTROL SHALL BE SUBSTANTIALLY ESTABLISHED PRIOR TO PROJECT ACCEPTANCE.



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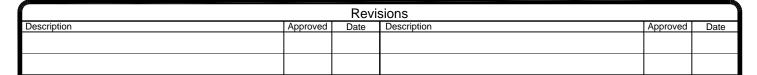
SHALLOW RETENTION BASIN

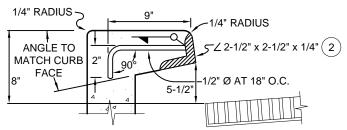
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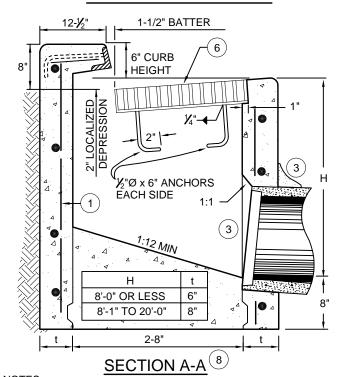
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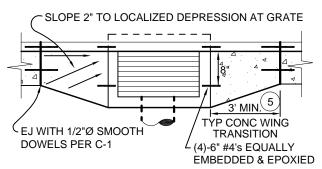


FACE ANGLE ANCHOR

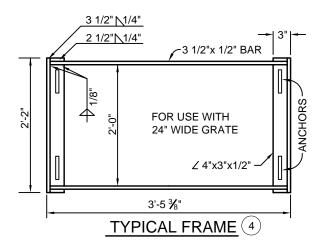


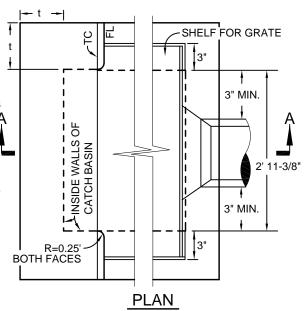
NOTES:

- 1. REINFORCING STEEL SHALL BE #4 BARS AT 18" O.C. PLACED 1-1/2"
 CLEAR TO INSIDE OF BOX UNLESS OTHERWISE NOTED. BASIN FLOORS
 SHALL HAVE WOOD FLOAT FINISH AND A MINIMUM SLOPE OF 12h:1v
 FROM ALL DIRECTIONS TOWARDS OUTLET PIPE. USE PORTLAND
 CEMENT CONCRETE PER THE DESIGN STANDARDS.
- 2. FACE ANGLE SHALL EXTEND FULL WIDTH OF BOX.
- 3. SMOOTH GROUT INSIDE AND OUTSIDE OF PIPE JUNCTION TO FORM A WATERTIGHT SEAL.
- 4. FRAME SHALL BE DIPPED IN COMMERCIAL QUALITY ASPHALTUM PAINT OR GALVANIZED.
- 5. IN ALL CASES 3' LONG CONCRETE WINGS SHALL BE CONSTRUCTED EITHER SIDE OF THE INLET. WHERE CATCH BASIN IS PLACED AGAINST AC DIKE A SEPARATE DETAIL SHALL BE PROVIDED ON THE PLANS SHOWING THIS TRANSITION.
- GRATE SHALL CONFORM TO STATE STANDARD PLAN D77B AND BE BICYCLE PROOF.
- PROJECT CONDITIONS MAY REQUIRE OIL AND/OR SEDIMENTATION CONTROL AT THE DIRECTION OF THE DEPARTMENT.
- 8. PRECAST INLETS MAY BE SUBSTITUTED AT THE APPROVAL OF THE DEPARTMENT. PRECAST INLETS SHALL HAVE 2" LOCALIZED DEPRESSION AT THE GRATE, 3' CONCRETE WINGS, EXPANSION JOINTS AS SHOWN, AND NO STEPS.



WING TRANSITION PLAN



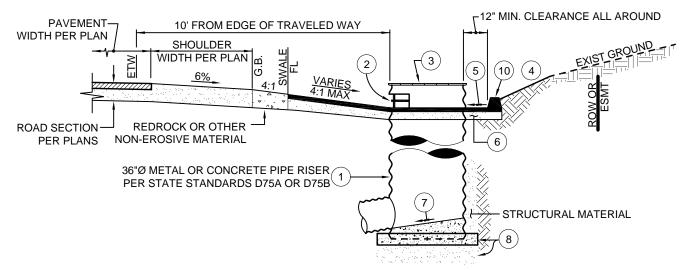


ALL CATCH BASINS SHALL BE EQUIP WITH A STAINLESS STEEL FRAME DESIGNED TO ACCEPT A "DrainPacTM" STORM DRAIN FILTER INSERT, OR EQUAL

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

CATCH BASIN

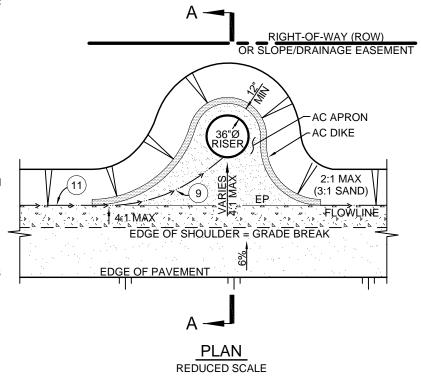
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- REFER TO THE 2006 STATE STANDARD PLANS D75A OR D75B FOR PIPE RISER DETAILS. THE PROJECT ENGINEER SHALL PROVIDE ALL DESIGN SPECIFICATIONS ON THE PLANS (RISER TYPE, COVER, GRATE, PIPE SIZE, ETC).
- CONSTRUCT TRASH RACK PER THE 2006 STATE STANDARD PLAN D75C.
- 3. A COVER MAY BE USED WHEN THE RISER NOT LOCATED IN SUMP CONDITIONS, OTHERWISE USE TYPE "GMP" OR "GCP" GRATE. PROJECT ENGINEER SHALL PROVIDE HYDRAULIC CALCULATIONS.
- MINIMUM CUT SLOPE SHALL BE 2 HORIZONTAL:1 VERTICAL (3h:1v IN NATIVE SAND).
- 5. SLOPE TO DRAIN TOWARDS RISER OPENING.
- 2-INCH MINIMUM ASPHALT CONCRETE OVER
 6-INCH MINIMUM CLASS II AGGREGATE BASE COMPACTED TO 95%.
- RISER FLOOR SLOPED TO DRAIN AT 4h:1v TOWARDS OUTLET, PROVIDE WOOD FLOAT FINISH.
- 8. PORTLAND CEMENT CONCRETE BASE PER STATE STANDARD D75A OR D75B, OVER 6-INCH MINIMUM CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION.
- MODIFY APPROACH GRADING AS REQUIRED TO PROVIDE SMOOTH FLOWLINE TRANSITION TOWARDS INLET.
- 10. TYPE "A" AC DIKE PER DRAWING C-3.
- 11. REQUIRED ROADSIDE DRAINAGE PER A-1 SERIES DRAWINGS. PROVIDE COMPACTED REDROCK OR OTHER DEPARTMENT APPROVED MATERIAL.
- 12. ALL EXPOSED STEEL SHALL BE COLD GALVANIZED.
- 13. A DRAINAGE EASEMENT SHALL BE OFFERED TO THE PUBLIC WHENEVER THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY.
- 14. MODIFY AS REQUIRED FOR SUMP CONDITIONS.

SECTION A-A

ALL CATCH BASINS SHALL BE EQUIP WITH A STAINLESS STEEL FRAME DESIGNED TO ACCEPT A 'DrainPacTM" STORM DRAIN FILTER INSERT, OR EQUAL.





SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

RURAL CATCH BASIN EDGE OF PAVEMENT CONDITION

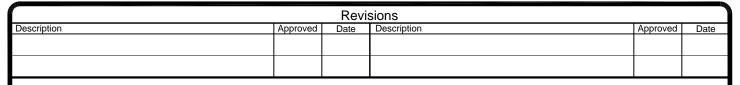
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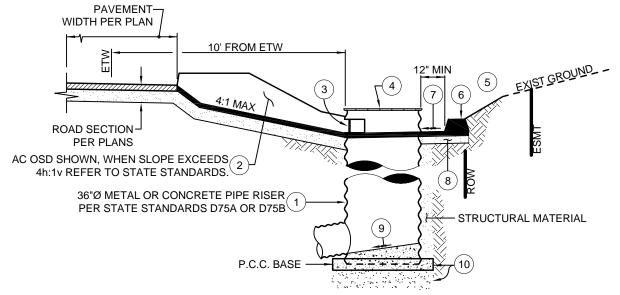
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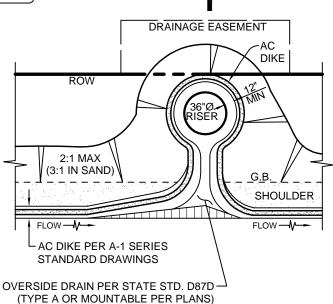


SECTION A-A

ALL CATCH BASINS SHALL BE EQUIP WITH A STAINLESS STEEL FRAME DESIGNED TO ACCEPT A "DrainPacTM" STORM DRAIN FILTER INSERT, OR EQUAL

NOTES:

- REFER TO THE 2006 STATE STANDARD PLANS D75A OR D75B FOR PIPE RISER DETAILS. THE PROJECT ENGINEER SHALL PROVIDE ALL DESIGN SPECIFICATIONS ON THE PLANS (RISER TYPE, LID, GRATE, PIPE SIZE, ETC).
- REFER TO THE 2006 STATE STANDARD D78D FOR AC OVERSIDE DRAIN DETAILS AND SPECIFICATIONS. THE PROJECT ENGINEER SHALL PROVIDE ALL DESIGN SPECIFICATIONS ON THE PLANS.
- CONSTRUCT TRASH RACK PER THE 2006 STATE STANDARD PLAN D75C.
- 4. A LID MAY BE USED WHEN THE RISER NOT LOCATED IN SUMP CONDITIONS, OTHERWISE USE TYPE "GMP" OR "GCP" GRATE. PROJECT ENGINEER SHALL PROVIDE HYDRAULIC CALCULATIONS.
- MINIMUM CUT SLOPE SHALL BE 2 HORIZONTAL:1 VERTICAL (3h:1v IN NATIVE SAND).
- 6. TYPE "A" AC DIKE PER DRAWING C-3...
- SLOPE TO DRAIN TOWARDS RISER OPENING.
- 8. 2-INCH MINIMUM ASPHALT CONCRETE OVER 6-INCH MINIMUM COMPACTED AGGREGATE BASE.
- RISER FLOOR SLOPED TO DRAIN AT 4h:1v TOWARDS OUTLET, PROVIDE WOOD FLOAT FINISH.
- 10. PORTLAND CEMENT CONCRETE BASE PER STATE STANDARD D75A OR D75B, OVER 6-INCH MINIMUM CLASS II AGGREGATE BASED TO 95% RELATIVE COMPACTION.
- 11. ALL EXPOSED STEEL SHALL BE COLD GALVANIZED.
- 12. A DRAINAGE EASEMENT SHALL BE OFFERED TO THE PUBLIC WHENEVER THE IMPROVEMENTS EXTEND BEYOND THE RIGHT-OF-WAY.
- 13. MODIFY AS REQUIRED FOR SUMP CONDITIONS.



PLAN

REDUCED SCALE



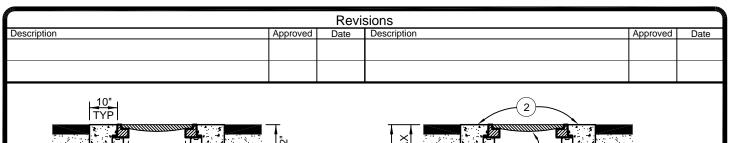
RURAL CATCH BASIN ASPHALT DIKE CONDITION

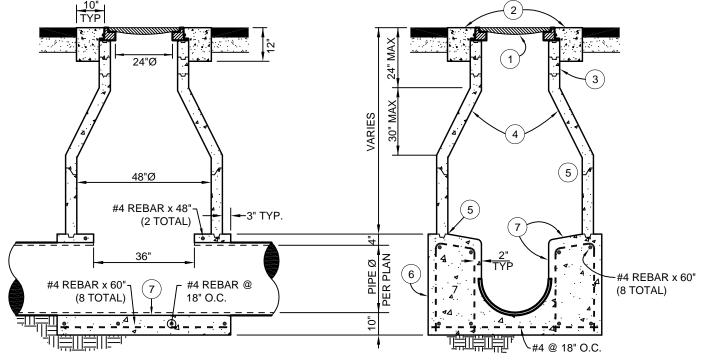
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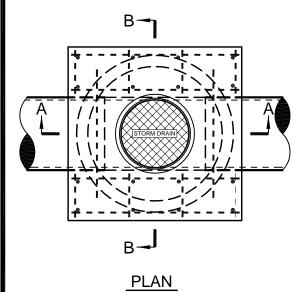
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SECTION A-A

SECTION B-B



NOTES:

- MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24"Ø OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL HAVE AN OPEN PICKHOLE, AND BE LETTERED "STORM DRAIN".
- 2. COLLAR SHALL BE CLASS A PORTLAND CEMENT CONCRETE, TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
- 3. PROVIDE ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE.
- PRECAST SHAFT(S) AND CONCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
- JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
- 6. MANHOLE BASE SHALL BE CLASS A PORTLAND CEMENT CONCRETE, AND REST ON UNDISTURBED MATERIAL. BOTTOM SHAFT SHALL BE WET-SET OR SET IN FORMED GROVE. PRECAST BASES MAY BE USED WITH PRIOR APPROVAL OF THE DEPARTMENT AND SHALL MEET ASTM C-478 61T.
- PIPE SHALL BE LAID THROUGH MANHOLE, AND TOP PORTION REMOVED AFTER BASE IS POURED. TROUGH SHALL HAVE STEEL-TROWEL FINISH, VERTICAL SIDES, ROUNDED CORNERS. TOP SURFACE SHALL HAVE 1-INCH PER 12-INCH SLOPE TOWARD TROUGH.
- 8. EQUIVALENT PRECAST BASE SHALL BE ALLOWED.
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

STORM DRAIN MANHOLE

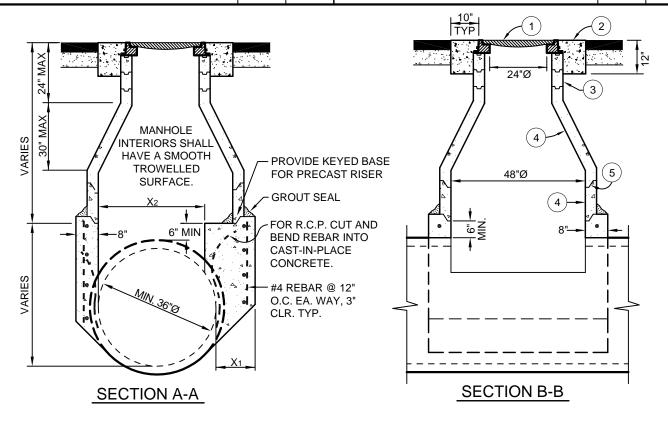
FOR PIPE DIAMETERS FROM 18" TO 36"

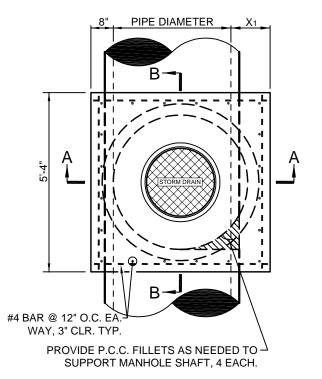
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PLAN

| | DIMENSIONS | | | | | | | |
|-------|-----------------------------------|-----|-----|----------------------------|--|--|--|--|
| PIPEØ | PIPEØ 36" 42" 48" 54" AND GREATER | | | | | | | |
| X1 | 20" | 14" | 8" | EQUALS PIPE WALL THICKNESS | | | | |
| X2 | 32" | 38" | 44" | 48" | | | | |

NOTES:

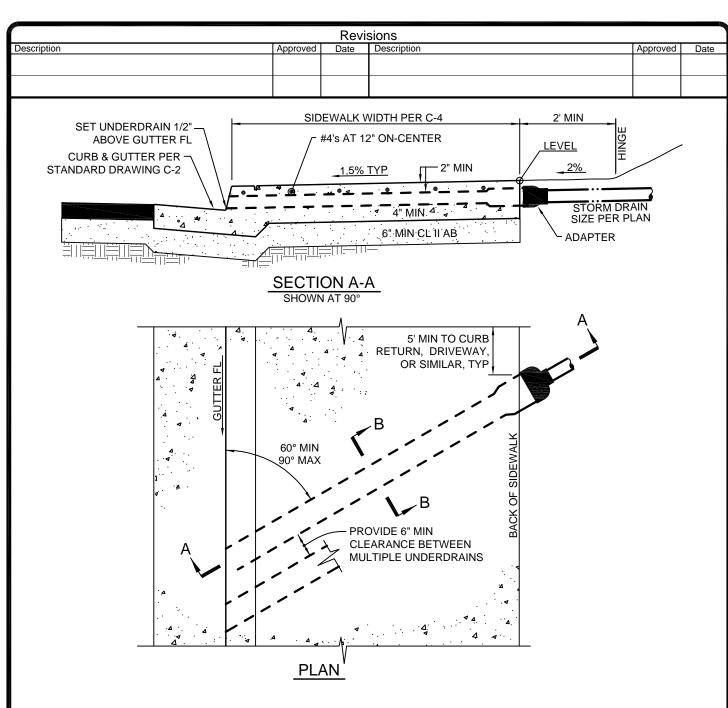
- MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24"Ø
 OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID
 SHALL HAVE AN OPEN PICKHOLE, AND BE LETTERED "STORM
 DRAIN".
- 2. COLLAR SHALL BE CLASS A PORTLAND CEMENT CONCRETE, TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
- 3. PROVIDE ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE.
- PRECAST SHAFT(S) AND CONCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
- JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
- UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS STORM DRAIN MANHOLE FOR PIPE DIAMETERS GREATER THAN 36"

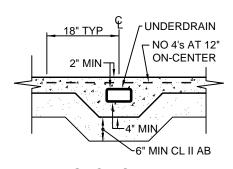
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- THE UNDERDRAIN SHALL BE A 3-INCH TALL BY 5-INCH WIDE (MINIMUM)
 RECTANGULAR CAST IRON CONDUIT, ALHAMBRA A-470 OR DEPARTMENT
 APPROVED EQUAL. THE DESIGN WIDTH SHALL BE DETERMINED BY THE
 PROJECT ENGINEER AND SHOWN ON THE PLANS.
- 2. THE UNDERDRAIN SHALL BE SET FLUSH WITH THE CURB FACE AND PLACED 1/2" ABOVE THE GUTTER FLOWLINE.
- 3. THE SLOPE OF THE UNDERDRAIN SHALL MATCH THE SIDEWALK CROSS SLOPE.
- UNDERDRAIN SHALL NOT BE LOCATED CLOSER THAN 5-FEET TO A DRIVEWAY OR CURB RETURN.
- MULTIPLE DRAINS SHALL HAVE 6-INCH MINIMUM CLEARANCE WITH MAXIMUM OF 3 DRAINS PER 10-FEET OF SIDEWALK.
- 6. REVERSE SIDEWALK UNDERDRAINS SHALL BE SET 1-INCH BELOW THE DESIGN GUTTER FLOWLINE, AND 3-FOOT GUTTER TRANSITIONS SHALL BE PROVIDED EITHER SIDE OF THE UNDERDRAIN. THE DESIGN ENGINEER SHALL DETAIL REVERSE UNDERDRAINS ON THE PLANS.



SECTION B-B

Scale:

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
SIDEWALK UNDERDRAIN

RESIDENTIAL

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Drawing No:

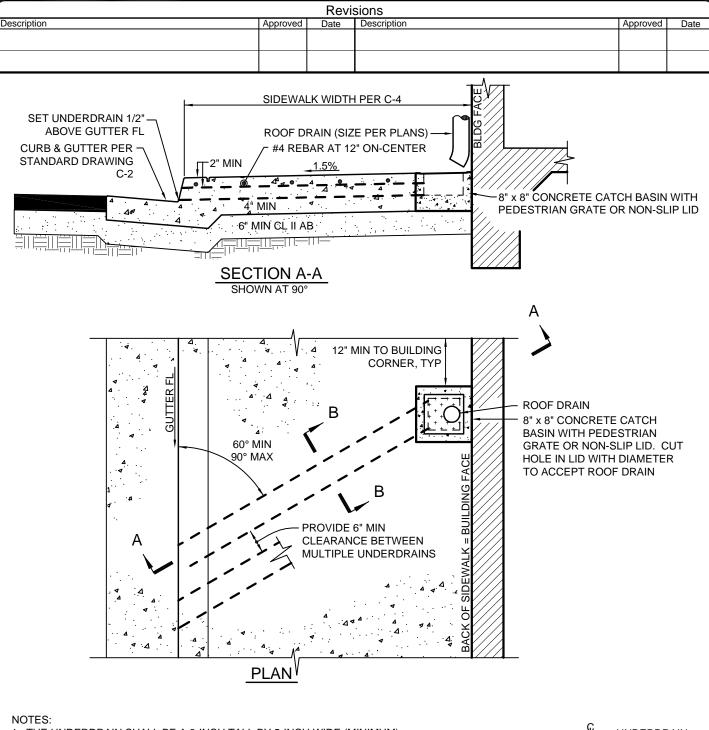
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Aug. 2006

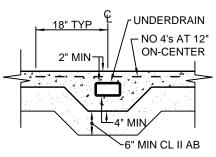
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- THE UNDERDRAIN SHALL BE A 3-INCH TALL BY 5-INCH WIDE (MINIMUM)
 RECTANGULAR CAST IRON CONDUIT, ALHAMBRA A-470 OR DEPARTMENT APPROVED
 EQUAL. THE DESIGN WIDTH SHALL BE DETERMINED BY THE PROJECT ENGINEER
 AND SHOWN ON THE PLANS.
- 2. THE UNDERDRAIN SHALL BE SET FLUSH WITH THE CURB FACE AND PLACED 1/2-INCH ABOVE THE GUTTER FLOWLINE.
- 3. THE SLOPE OF THE UNDERDRAIN SHALL MATCH THE SIDEWALK CROSS SLOPE.
- 4. UNDERDRAIN SHALL NOT BE LOCATED CLOSER THAN 5-FEET TO A DRIVEWAY OR CURB RETURN.
- 5. MULTIPLE DRAINS SHALL HAVE 6-INCH MINIMUM CLEARANCE WITH MAXIMUM OF 3 DRAINS PER 10-FEET OF SIDEWALK.
- ALL JUNCTION BOXES SHALL HAVE A PEDESTRIAN RATED GRATE OR NON-SLIP LID AND BE APPROVED BY THE DEPARTMENT.



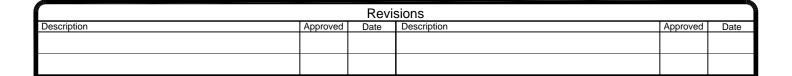
SECTION B-B

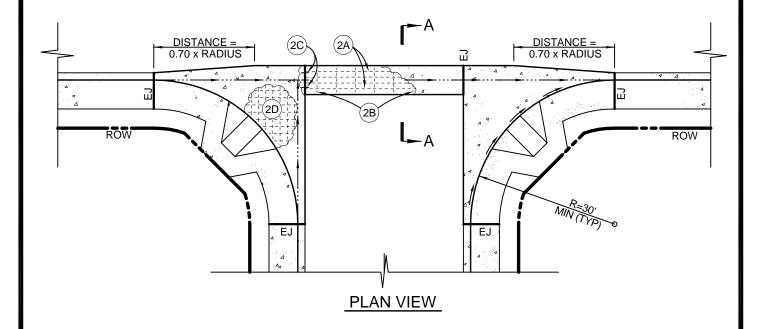
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
SIDEWALK UNDERDRAIN

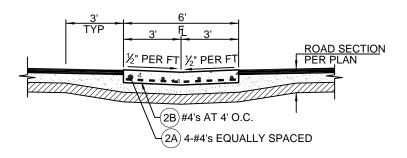
SIDEVVALK UNDERDRAIN COMMERCIAL (ZERO SETBACK) Scale: Issued: Aug. 2006

Drawing No:

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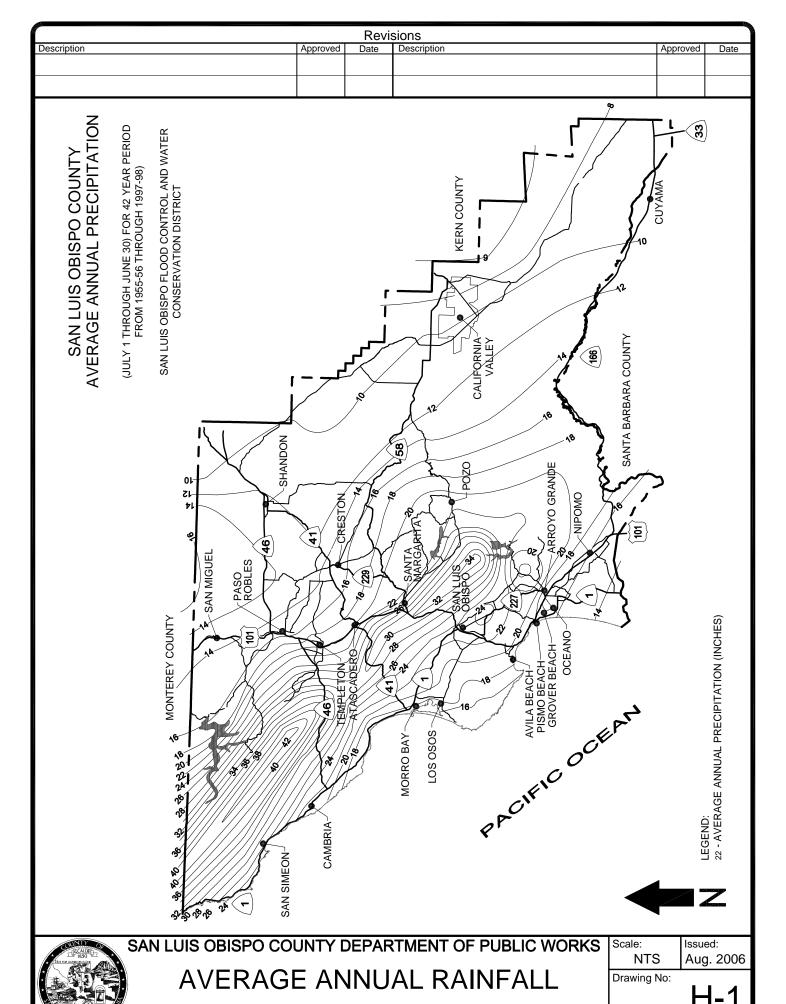
SECTION A-A

NOTES:

- 1. TYPICAL CROSS GUTTER & SPANDREL SECTION SHALL BE:
 - 8" MINIMUM PORTLAND CONCRETE CEMENT PER THE DESIGN STANDARDS, OVER
 - 6" MINIMUM CLASS II AGGREGATE BASE (OR MATCH ROAD SECTION) TO 95% RELATIVE COMPACTION, OVER
 - 227 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION
- 2. TYPICAL CROSS GUTTER & SPANDREL REINFORCEMENT SHALL BE:
 - 2A. (4) #4 REBAR CONTINUOUS & EQUALLY SPACED
 - 2B. #4 REBAR AT 4' ON CENTER
 - 2C. EXPANSION JOINT WITH (3) 1/2" Ø x 36" SMOOTH GREASED DOWELS (TYP BOTH SIDES)
 - 2D. #4 REBAR AT 18" ON CENTER ALL WAYS (3" CLEAR FROM ALL EDGES, TYPICAL)
 - IN ALL CASES, DOBIES SET 2-INCHES ABOVE FINISHED AGGREGATE BASE SHALL BE USED TO SUPPORT REINFORCEMENT.
- 3. CONCRETE SHALL BE PORTLAND CEMENT CONCRETE CONFORMING TO THE DESIGN STANDARDS. CONCRETE CURING SHALL BE BY PIGMENTED CURING COMPOUND METHOD USING WHITE PIGMENT TYPE.
- 4. CURB RAMPS SHALL BE INSTALLED PER STANDARD DRAWING C-5.
- 5. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN THE CROSS GUTTER OR SPANDREL.

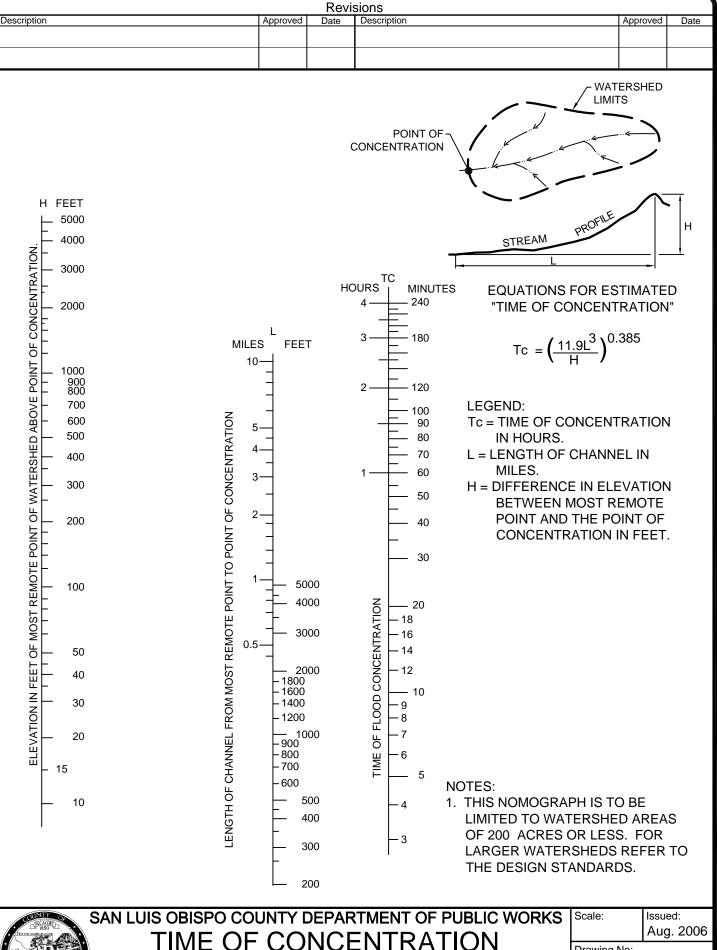


Scale: Issued: Aug. 2006
Drawing No:



Sheet No:

1 of 1



TIME OF CONCENTRATION FOR WATERSHEDS LESS THAN 200 ACRES

Drawing No:

Sheet No: 1 of

| Revisions | | | | | | | |
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TABLE 1: RATIONAL METHOD STANDARD RUNOFF COEFFICIENTS FOR **DEVELOPED AREAS**

| | SOIL | | SLOPE | | FOOT |
|---|------|------|-----------|------|------|
| TYPE OF DEVELOPMENT | TYPE | <2% | 2% to 10% | >10% | NOTE |
| RESIDENTIAL LOTS > 20,000 SF | С | 0.35 | 0.40 | 0.50 | 1,2 |
| | S | 0.25 | 0.35 | 0.40 | 1,2 |
| RESIDENTIAL LOTS 10,000 SF TO 19,999 SF | С | 0.40 | 0.45 | 0.55 | 1,2 |
| II . | S | 0.30 | 0.40 | 0.45 | 1,2 |
| RESIDENTIAL LOTS 6,000 SF TO 9,999 SF | С | 0.45 | 0.55 | 0.65 | 1,2 |
| 11 | S | 0.35 | 0.40 | 0.50 | 1,2 |
| PLANNED DEVELOPMENTS (PUD) | С | 0.65 | 0.70 | 0.75 | 1,2 |
| " | S | 0.60 | 0.65 | 0.70 | 1,2 |
| APARTMENTS | С | 0.50 | 0.60 | 0.70 | 2 |
| II . | S | 0.40 | 0.50 | 0.60 | 2 |
| INDUSTRIAL | С | 0.55 | 0.65 | 0.75 | 2 |
| 11 | S | 0.45 | 0.55 | 0.65 | 2 |
| COMMERCIAL | С | 0.75 | 0.80 | 0.85 | 2 |
| 11 | S | 0.70 | 0.75 | 0.80 | 2 |

FOOT NOTES:

- 1. ESTIMATION OF COMPOSITE "C" VALUE USING ESTIMATED IMPERVIOUS AREAS AND STD. DWG. H-3a (TABLE 2) MAY BE REQUIRED BY THE DEPARTMENT. IMPERVIOUS AND PAVED AREAS SHALL USE C=0.95.
- 2, ALL VALUES SHOWN ARE INTENDED TO BE MINIMUMS. HIGHER VALUES MAY BE REQUIRED BY THE DEPARTMENT.

LEGEND:

- C CLAY, ADOBE, ROCK, OR IMPERVIOUS MATERIAL
- S SAND, GRAVEL, LOAM, OR PERVIOUS MATERIAL

- 1. COEFFICIENTS FOR RESIDENTIAL LOTS ASSUME TYPICAL SINGLE FAMILY RESIDENCE WITH ASSOCIATED GARAGE, DRIVEWAY, FLATWORK, AND LANDSCAPING. HIGHER DENSITY RESIDENTIAL DEVELOPMENTS MAY REQUIRE USING COMPOSITE COEFFICIENT EVALUATED BY THE DESIGN ENGINEER AND BASED ON PROPOSED DEVELOPMENT IMPERVIOUS
- 2. FOR ALL TYPES OF DEVELOPMENT, COEFFICIENTS ARE INCLUSIVE OF ONLY THE LOT AREA OUTSIDE THE RIGHT-OF-WAY (NET LOT AREA). PAVED SURFACES BETWEEN ROAD CENTERLINE AND RIGHT-OF-WAY SHALL BE EVALUATED SEPARATELY AND INCLUDED TO DETERMINE A COMPOSITE "C" FACTOR.
- 3. ALL IMPERVIOUS AREAS AND PAVED AREAS SHALL USE C = 0.95.



Scale: Issued: Aug. 2006 Drawing No:

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TABLE 2: RATIONAL METHOD STANDARD RUNOFF COEFFICIENTS FOR UNDEVELOPED AREAS

| | EXTREME | HIGH | NORMAL | LOW |
|----------------------|---|--|---|---|
| RELIEF | 0.28 TO 0.35 STEEP, RUGGED TERRAIN WITH AVERAGE SLOPES ABOVE 30% | 0.20 TO 0.28 HILLY, WITH AVERAGE SLOPES OF 10% TO 30% | 0.14 TO 0.20 ROLLING, WITH AVERAGE SLOPE OF 5% TO 10% | 0.08 TO 0.14 RELATIVELY FLAT LAND, WITH AVERAGE SLOPES OF 0% TO 5% |
| SOIL INFILTRATION | 0.12 TO 0.16 NO EFFECTIVE SOIL COVER, EITHER ROCK OR THIN MANTLE OF NEGLIGIBLE INFILTRATION CAPACITY | 0.08 TO 0.12 SLOW TO TAKE UP WATER, CLAY OR SHALLOW LOAM SOILS OF LOW INFILTRATION CAPACITY, IMPERFECTLY OR POORLY DRAINED | 0.06 TO 0.08 NORMAL; WELL DRAINED LIGHT OR MEDIUM TEXTURED SOILS, SANDY LOAMS, SILT AND SILT LOAMS | 0.04 TO 0.06 HIGH; DEEP SAND OR OTHER SOILS THAT TAKES UP WATER READILY, VERY LIGHT WELL DRAINED SOILS |
| VEGETAL COVER | 0.12 TO 0.16 NO EFFECTIVE PLANT COVER, BARE OR VERY SPARSE COVER | 0.08 TO 0.12 POOR TO FAIR; CULTIVATION CROPS, OR POOR NATURAL COVER, LESS THAN 20% OF DRAINAGE AREA OVER GOOD COVER | 0.06 TO 0.08 FAIR TO GOOD; ABOUT 50% OF AREA IN GOOD GRASSLAND OR WOODLAND, NOT MORE THAN 50% OF AREA IN CULTIVATED CROPS | 0.04 TO 0.06 GOOD TO EXCELLENT; ABOUT 90% OF DRAINAGE AREA IN GOOD GRASSLAND, WOODLAND, OR EQUIVALENT COVER |
| SURFACE STORAGE | 0.10 TO 0.12 NEGLIGIBLE SURFACE DEPRESSIONS FEW AND SHALLOW, DRAINAGE WAYS STEEP AND SMALL, NO MARSHES | 0.08 TO 0.10 LOW; WELL DEFINED SYSTEM OF SMALL DRAINAGE WAYS, NO PONDS OR MARSHES | 0.06 TO 0.08 NORMAL; CONSIDERABLE SURFACE STORAGE, LAKES AND POND MARSHES | 0.04 TO 0.06 HIGH; SURFACE STORAGE, HIGH DRAINAGE SYSTEM NOT SHARPLY DEFINED, LARGE FLOOD PLAIN STORAGE OR LARGE NUMBER OF PONDS OR MARSHES |

(REFERENCES FIGURE 819.2A OF HIGHWAY DESIGN MANUAL)

EXAMPLE:

GIVEN: AN UNDEVELOPED WATERSHED CONSISTING OF:

- 1. ROLLING TERRAIN WITH AVERAGE SLOPES OF 5%
- 2. CLAY SOILS
- 3. GOOD GRASSLAND AREA
- 4. NORMAL SURFACE DEPRESSIONS

FIND: THE RUNOFF COEFFICIENT FOR THE ABOVE WATERSHED

SOLUTION:

- 1. RELIEF = 0.14
- 2. SOIL INFILTRATION = 0.08
- 3. VEGETAL COVER = 0.04
- 4. SURFACE STORAGE = 0.06

ANSWER: THE RUNOFF COEFFICIENT, C = 0.32

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS RUNOFF COEFFICIENTS FOR UNDEVELOPED AREAS

Scale: Issued: Aug. 2006

Drawing No:

H-3a

| Revisions | | | | | | | |
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TABLE 1: ANNUAL RAINFALL < 14":

| | | | | Duration | | | | |
|------------------|--------|--------|--------|----------|------|------|------|-------|
| | 10 Min | 15 Min | 30 Min | 1 Hr | 2 Hr | 3 Hr | 6 Hr | 10 Hr |
| ছ _2 | 1.00 | 0.90 | 0.60 | 0.40 | 0.26 | 0.22 | 0.18 | 0.14 |
| _5f | 1.40 | 1.20 | 0.80 | 0.50 | 0.37 | 0.32 | 0.25 | 0.20 |
| 01_a:8 _10 | 1.70 | 1.40 | 1.00 | 0.60 | 0.44 | 0.38 | 0.30 | 0.23 |
| ē≿ 25 | 2.00 | 1.70 | 1.10 | 0.70 | 0.54 | 0.47 | 0.37 | 0.28 |
| ਹਿਲ੍ਹੇ <u>50</u> | 2.20 | 1.90 | 1.30 | 0.80 | 0.60 | 0.53 | 0.44 | 0.34 |
| 100 | 2.40 | 2.10 | 1.40 | 0.90 | 0.65 | 0.59 | 0.48 | 0.36 |

TABLE 2: ANNUAL RAINFALL 14" TO 17":

| | | | | Duration | | | | |
|--------------------|--------|--------|--------|----------|------|------|------|-------|
| | 10 Min | 15 Min | 30 Min | 1 Hr | 2 Hr | 3 Hr | 6 Hr | 10 Hr |
| ছ _2 | 1.30 | 1.10 | 0.80 | 0.50 | 0.35 | 0.30 | 0.23 | 0.18 |
| <u>5</u> <u>fe</u> | 1.90 | 1.60 | 1.10 | 0.70 | 0.49 | 0.42 | 0.33 | 0.26 |
| 01_age 10 | 2.30 | 1.90 | 1.30 | 0.80 | 0.60 | 0.51 | 0.40 | 0.30 |
| ē b 25 | 2.60 | 2.20 | 1.50 | 1.00 | 0.71 | 0.63 | 0.50 | 0.38 |
| ਹੁੰ 50 | 3.00 | 2.50 | 1.70 | 1.10 | 0.81 | 0.74 | 0.60 | 0.47 |
| ² 100 | 3.20 | 2.70 | 1.90 | 1.20 | 0.90 | 0.80 | 0.65 | 0.49 |

TABLE 3: ANNUAL RAINFALL 18" TO 21":

| | | | | Duration | | | | |
|------------------|--------|--------|--------|----------|------|------|------|-------|
| | 10 Min | 15 Min | 30 Min | 1 Hr | 2 Hr | 3 Hr | 6 Hr | 10 Hr |
| <u>v</u> 2 | 1.70 | 1.40 | 1.00 | 0.65 | 0.44 | 0.37 | 0.29 | 0.22 |
| ter 5 | 2.30 | 1.90 | 1.30 | 0.85 | 0.60 | 0.52 | 0.41 | 0.33 |
| 10 ars | 2.80 | 2.40 | 1.60 | 1.03 | 0.74 | 0.64 | 0.50 | 0.38 |
| ຍ້⇔້ 25 | 3.20 | 2.70 | 1.90 | 1.20 | 0.92 | 0.80 | 0.64 | 0.50 |
| ្ត្ល 50 | 3.70 | 3.10 | 2.10 | 1.40 | 1.05 | 0.92 | 0.74 | 0.58 |
| ^ش 100 | 4.00 | 3.40 | 2.30 | 1.50 | 1.13 | 1.00 | 0.80 | 0.62 |

TABLE 4: ANNUAL RAINFALL 22" TO 28":

| | | | | Duration | | | | |
|------------------|--------|--------|--------|----------|------|------|------|-------|
| | 10 Min | 15 Min | 30 Min | 1 Hr | 2 Hr | 3 Hr | 6 Hr | 10 Hr |
| <u>v</u> 2 | 2.10 | 1.80 | 1.20 | 0.77 | 0.55 | 0.47 | 0.36 | 0.28 |
| ten 2 | 2.80 | 2.50 | 1.70 | 1.05 | 0.76 | 0.64 | 0.52 | 0.42 |
| 01 ga ge | 3.60 | 3.00 | 2.10 | 1.30 | 0.92 | 0.81 | 0.64 | 0.48 |
| e ≥ 25 | 3.90 | 3.50 | 2.40 | 1.50 | 1.10 | 0.98 | 0.78 | 0.60 |
| ਹੁੰ 50 | 4.50 | 3.90 | 2.60 | 1.70 | 1.28 | 1.15 | 0.94 | 0.72 |
| ² 100 | 5.00 | 4.30 | 2.90 | 1.85 | 1.40 | 1.25 | 0.98 | 0.76 |

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS | Scale:

RAINFALL INTENSITY DATA

Scale:

Issued: Aug. 2006

Drawing No:

H-4

| stion, compare dissipater rock size secific constraints. e approximate, (squared-off excave approximate, (squared-off excave Backing No. 2 10" 250 Backing No. 1 12" 300 1/2 T 36" 900 1/2 T 30" 750 1/2 T 30" 750 1/2 T 30" 750 1/2 T 30" 900 | and on an air a contract on a final accompance of aireallan airea | | |
|--|---|---------|--|
| quared-off excavation not required). SIZE Z trench depth Type of RSP-fabric ass Range mm nonwoven or woven No. 2 10" 250 - 400 16" A or B No. 1 12" 300 - 450 18" A or B It 30" 750 - 900 36" B T 36" 900 - 1100 42" B T 48"1200 - 1500 60" B total width 3 x Dia culvert bia culvert so none protrudes so none protrudes above ground | Select final rock size based on engineering judgment and field experience at similar sites. Then downstream channel requires rock bank protection, compare dissipater rock size to bank rock size. | | |
| FOCK SIZE Z trench depth Type of RSP-fabric RSP-class Range mm nonwoven or woven Backing No. 2 10° 250 - 400 16° A or B Backing No. 1 12° 300 - 450 18° A or B B Light 18° 450 - 600 24° B B Light 18° 450 - 600 24° B B acking No. 1 12 T 36° 900 - 1100 42° B B total length total width 3 x Dia culvert 2 x | | | |
| # FOCK SIZE | | | |
| total length total length Expected to the serving No. 2 10° 250 - 400 16° A or B Light 18° 450 - 600 24° B Light 18° 450 - 600 24° B Light 18° 450 - 600 24° B 1/2 T 30° 750 - 900 36° B total length total width S x Dia Culvert Dia The service of the | SIZE Z trench depth | -fabric | |
| Backing No. 1 12" 300 - 450 18" | w Sab Backing No. 2 10" 250 - 400 16" | 8 | |
| total length Sociation 1/4 T 30" 750 - 900 36" B | 12" 300 - 450 18" A | 3 | |
| total length total length total length total width (a) x Dia (b) (b) (c) x Dia (d) x Dia (d) x Dia (e) x Dia (f) x Dia (f) x Dia (f) x Dia (f) x Dia (g) | Light 18" 450 - 600 24" | | |
| total length total length total width Solution Example 2 And solution total width above ground above ground 1.2 T 36" 900 - 1100 42" B total width 3 x Dia 3 x Dia Culvert Dia The solution of | 1/4 T 30" 750 - 900 36" | | |
| total length 1 T 48"1200 - 1500 60" B | """ 1/2 T 36" 900 - 1100 42" | | |
| total width 2 x Dia culvert A Dia pin RSP-fabric pin RSP-fabric pin RSP-fabric above ground | 1 T 48"1200 - 150060" | | |
| form form by the state of the s | 1 | | |
| Culvert Culvert Pia Culvert Dia rt Pia RSP-fabric Z | total width | | |
| Culvert The post of the properties of the prope | x Dia | | |
| Tr. Section of the se | culvert | | |
| THE SOCIETY OF THE SP-fabric Spin RSP-fabric S | 100 | | |
| Secretary of the property of t | | | |
| pin RSP-fabric | Z Table | fabric | |
| A-A and walk | 11/11 | pun | |
| Work bill Ker | th A-A end view | | |
| | th A-A | | |

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS ROCK SLOPE PROTECTION SIZING METHOD AT CULVERT OUTLETS

Scale:

Issued: Aug. 2006

Drawing No:

H-5

Sheet No:

1 of 2

| proved | | | RSP-fabric | RSP- | |
|-----------------------------|--|--|---|-----------------------------|--|
| A | Match dissipater grade with downstream flow line and adjacent ground. Trim RSP-fabric so that none protrudes above ground. | Match dissipat flow line and a flow line RSP-fabri above ground. | 7 trench "" C C C C C C C C C | Construction Detail Note C | Construct |
| | Place RSP-fabric loosely, and pin it to sides of trench. Place RSP-class of dissipater rock in trench. Rock shall not protrude above culver flowline or adjacent ground. | B. Place RSP-fabric I to sides of trench. C. Place RSP-class of trench. Rock shall culvert flowline or Match disciplinators. | culvert | 6 diameters | 2 X = 6 dia |
| | Construction Detail Notes Excavate and/or fill dissipater trench to dimensions (X, Y, Z) as shown on plans. Squared edges not required. | Constructi A. Excavate an dimensions (Squared edg | A-A end view Y = width 3 diameters | (2+X) feet | Length = (2 + |
| Revisions Date Description | Determining stable rock weight W, design guidelines, see sheet 1 of 2. Added 2 feet to dissipater, supports culvert end, prevents headcut. Table (standard rock sizes, D50, Z, RSP-class, RSP-fabric Type). RSP-fabric details. Construction Detail Notes A, B, C, and D. Include them on contract plans. | ck weight W, design g ater, supports culvert sizes, D50, Z, RSP-cla otes A, B, C, and D. ract plans. | 1. Determining stable rock weight W, design 2. Added 2 feet to dissipater, supports culve 3. Table (standard rock sizes, D50, Z, RSP-4. RSP-fabric details. 5. Construction Detail Notes A, B, C, and D Include them on contract plans. | | - What was |
| | Water State of the | ons (X, Y) & e | Basic dissipater dimensions (X, Y) | nen | ¥ ← |
| Approv | В | 1 ton | 4.3 | 2.85 | ton |
| F | В | ½ ton | 3.4 | 2.26 | ½ ton |
| | В | , 1/4 ton | 2.7 | 1.79 | 1/4 ton |
| | В | Light | 2.0 | 1.32 | 200 pounds |
| | A or B | Backing No. 1 | 1.5 | 0.95 | 75 pounds |
| | A or B | Backing No. 2 | 1.0 | 99'0 | 25 pounds |
| | nonwoven or woven | | Z trench depth in feet 1.5 times D50 of standard W50 | D50 feet of standard W50 | woo standard rock weight. Select a W50 greater than determined stable rock weight W. |

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS ROCK SLOPE PROTECTION SIZING Drawin METHOD AT CULVERT OUTLETS

Issued: Aug. 2006

Drawing No:

| Revisions | | | | | | | |
|-------------|----------|------|-------------|----------|------|--|--|
| Description | Approved | Date | Description | Approved | Date | | |
| | | | | | | | |
| | | | | | | | |

| "Engineer | "Engineering Firm's Name, Address, & Phone Number" | | | | | | |
|---|--|---------------------|-------------------------|---------|--|--|--|
| PUBLIC IMPROVEMENT PLANS FOR "Project Identification (Tract No., Parcel No., etc.)" | | | | | | | |
| | ", | Sheet Title |) " | | | | |
| Design/Drawn | County Plan Checker | APPROVED FOR | R COUNTY REQUIREM | MENTS | | | |
| | | Development Service | es Engineer | Date | | | |
| Job No. | County W.O. No. 201R11- XXXX | "Engineer's Name a | nd Registration Number" | Date | | | |
| California Coordinates | | | County Road No. | Sheet X | | | |
| N XXX | E XX | XX | | Of XX | | | |

1. THE COUNTY TITLE BLOCK SHALL BE LOCATED IN THE LOWER RIGHT CORNER OF EACH SHEET WITHIN THE SET WITH EACH SHEET BEING STAMPED, SIGNED, AND DATED BY THE PROJECT ENGINEER.

BLOCK 1: COUNTY TITLE BLOCK

| RECORD DRAWIN | GS |
|--------------------------------------|------|
| "Engineer's Name & Registration No." | DATE |
| REVISIONS THIS SHEET: | |
| \bigwedge | |
| <u> </u> | |
| <u> </u> | |
| <u></u> | |
| <u>/\$</u> \ | |

NOTES:

- 1. EACH SHEET SHALL SHALL HAVE A RECORD DRAWING BLOCK AND BE SIGNED AND DATED BY THE ENGINEER OF WORK.
- 2. THE ENGINEER OF WORK SHALL WET STAMP AND SIGN EACH RECORD DRAWING SHEET IF (a) THE ORIGINAL LICENSE HAS EXPIRED, OR (b) THE ENGINEER OF WORK IS DIFFERENT THAN THE PROJECT ENGINEER.
- 3. REVISION NUMBERS SHALL BE USED ONLY ONCE WITHIN ALL SHEETS OF A SET. EACH ADDITIONAL REVISION SHALL HAVE ITS OWN UNIQUE NUMBER WITHIN THE SET.

BLOCK 2: COUNTY RECORD DRAWING BLOCK

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS | Scale: STANDARD COUNTY TITLE BLOCKS | Drawin

Scale: Issued: Aug. 2006

Drawing No: L-1

1 of 1

Revisions Description Approved Date Description AB - AGGREGATE BASE JB - JUNCTION BOX ABN - ABANDON JP - JUNCTION POLE AC - ASPHALT CONCRETE LAT - LATERAL ACD - ASPHALT CONCRETE DIKE LF - LINEAR FEET ADJ - ADJUST LP - LOW POINT ADT - AVERAGE DAILY TRIPS LT - LEFT ANG - ANGLE MAX - MAXIMUM MH - MANHOLE APROX - APPROXIMATE MIN - MINIMUM ASBLY - ASSEMBLY AV - AIR VACUUM MON - MONUMENT NTS - NOT TO SCALE AVO - AVOCADO TREE **BLDG - BUILDING** OAE - OR APPROVED EQUAL OG - ORIGINAL (EXISTING) GROUND **BM - BENCHMARK** OHW - OVERHEAD WIRE BTM - BOTTOM **OPT - OPTION** BVC - BEGIN VERTICAL CURVE BW - BACK OF WALK (GRADE) OS - ORIGINAL SURFACE **UG - UNDERGROUND** CATV - CABLE TELEVISION (LINE) PCC - PORTLAND CEMENT CONCRETE **CB - CATCH BASIN** CIP - CAST IRON PIPE PCCL - POINT OF COMPOUND CURVE LEFT PCCR - POINT OF COMPOUND CURVE RIGHT CL - CENTERLINE CMU - CONCRETE MASONRY UNIT PI - POINT OF INTERSECTION PL - PROPERTY LINE CNTR - CENTER POC - POINT OF CONNECTION CO - CLEANOUT **COM - COMMUNICATIONS** PRC - POINT OF REVERSE CURVE PRCL - POINT OF REVERSE CURVE LEFT **CONC - CONCRETE** PRCR - POINT OF REVERSE CURVE RIGHT CSP - CORRUGATED STEEL PIPE **PVC - POLYVINYL CHLORIDE** D/W - DRIVEWAY DDCV - DOUBLE DETECTOR CHECK VALVE **PVMT - PAVEMENT** DI - DROP INLET RAD (R) - RADIUS RCP - REINFORCED CONCRETE PIPE **EJ - EXPANSION JOINT** RD - ROAD **ELEC - ELECTRICAL REF - REFERENCE ELEV - ELEVATION EP - EDGE OF PAVEMENT REQ - REQUIRED ESMT - EASEMENT** ROW (R/W) - RIGHT OF WAY ETW - EDGE OF TRAVELED WAY RSP - ROCK SLOPE PROTECTION RT - RIGHT EUC - EUCALYPTUS TREE S/W - SIDEWALK EVC - END VERTICAL CURVE SD - STORM DRAIN EXIST OR (E)- EXISTING SHLDR - SHOULDER FG - FINISHED GRADE FH - FIRE HYDRANT SHT - SHEET FL - FLOWLINE SLOCO - SAN LUIS OBISPO COUNTY SS - SANITARY SEWER FM - FORCE MAIN STA - STATION FNC - FENCE STD - STANDARD FS - FINISHED SURFACE **FUT - FUTURE** TB - THRUST BLOCK TBA - TO BE ABANDONED IN PLACE TBM - TEMPORARY BENCHMARK GB - GRADE BREAK GM - GAS METER TBR - TO BE REMOVED TBP - TO BE PROTECTED **GP - GRADING PLAN** TC - TOP OF CURB **GR - GRATE** GV - GAS VALVE **TEL - TELEPHONE** HDPE - HIGH DENSITY POLYETHYLENE **TEMP - TEMPORARY** HORZ - HORIZONTAL TF - TOP OF FOOTING **HP - HIGH POINT** TG - TOP OF GRATE

UD - UNDER DRAIN UP - UTILITY POLE VERT - VERTICAL VC - VERTICAL CURVE VCP - VITRIFIED CLAY PIPE VLT - VAULT

Approved

WL - WATER LINE WM - WATER METER BOX WPJ - WEAKENED PLANE JOINT WS - WATER SERVICE

W.S. - WATER SURFACE WV - WATER VALVE WW - WING WALL

WWM - WELDED WIRE MESH

± - APPROXIMATE Ø - DIAMETER

VLV - VALVE

INV - INVFRT

HW - HEADWALL

IRR - IRRIGATION

ICV - IRRIGATION CONTROL VALVE

IPR - IRRIGATION PRESSURE REDUCER

NOTES:

1. STATE STANDARD ABBREVIATIONS MAY BE USED IN CONJUNCTION OR IN SUBSTITUTION OF THE DEPARTMENT'S STANDARD ABBREVIATIONS. THE PROJECT ENGINEER MAY SUBSTITUTE COUNTY/STATE ABBREVIATIONS WITH THEIR OWN, HOWEVER, AN ABBREVIATION LEGEND SHALL BE PROVIDED ON THE TITLE SHEET OF THE CONSTRUCTION PLANS.

TRVLD - TRAVELED (LANE)

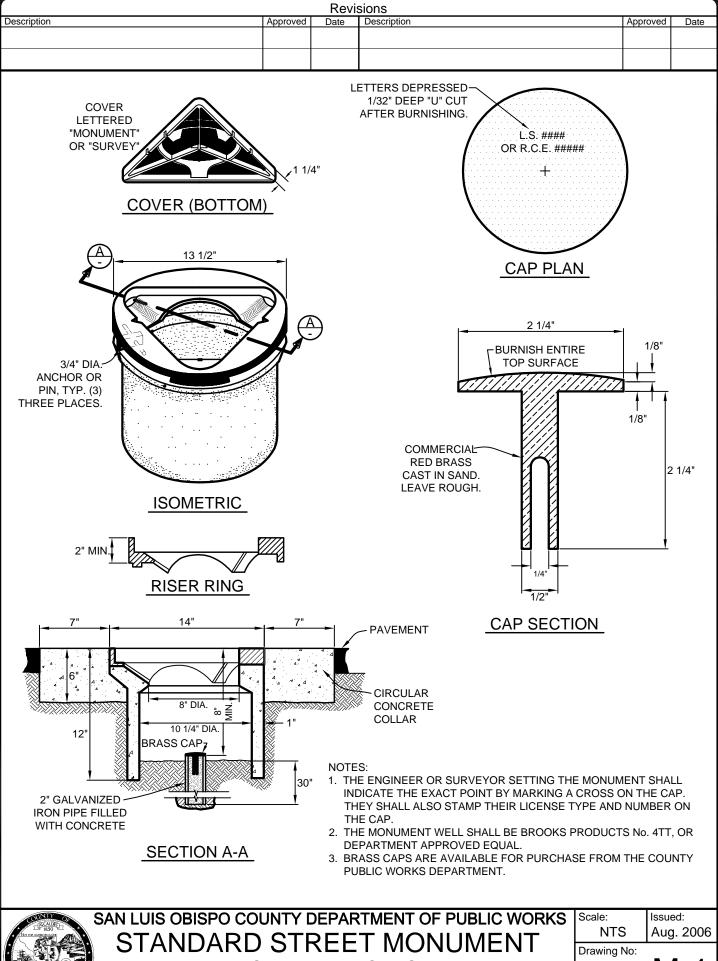
TYP - TYPICAL

TW - TOP OF WALL

STANDARD ABBREVIATIONS

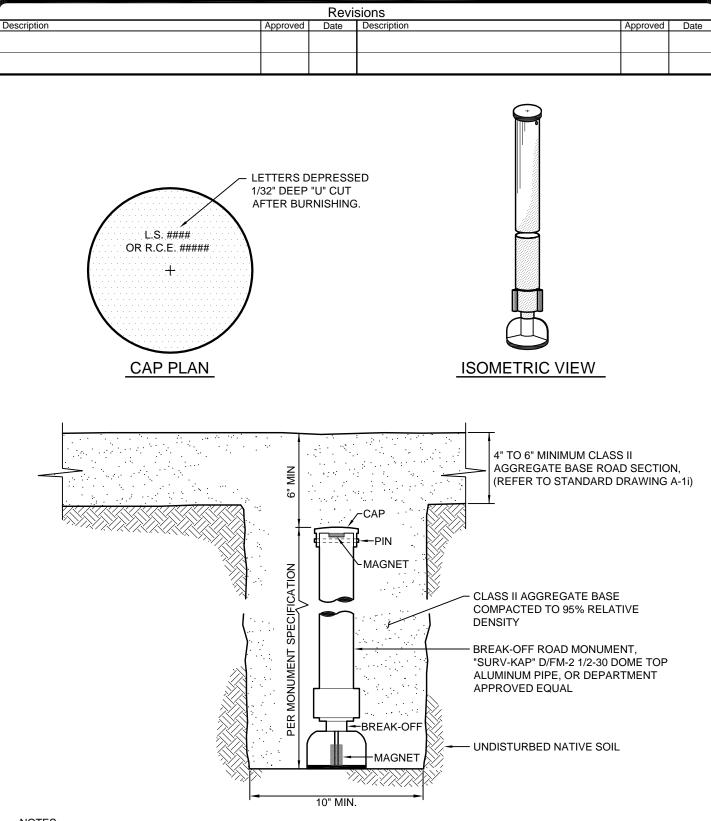
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS | Scale: Issued: Aug. 2006 Drawing No:

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FOR PAVED ROADS

Sheet No: 1 of 1



- 1. BREAK-OFF MONUMENTS ARE DESIGNED TO BREAK OFF AT A PRE-DETERMINED POINT, LEAVING A PORTION OF THE BASE CONTAINING THE MAGNET FOR RELOCATING THE ORIGINAL SURVEY POINT.
- 2. BREAK-OFF MONUMENTS MAY BE SPECIFIED TO MONUMENT CENTERLINE OF COUNTY RURAL GRAVEL ROADS, (REFER TO STANDARD DRAWING A-1i).
- 3. NOT FOR USE IN PAVED ROADS (REFER TO STANDARD DRAWING M-1).

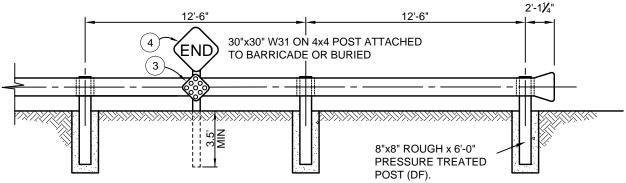
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD STREET MONUMENT FOR GRAVEL ROADS

Scale: Issued: Aug. 2006
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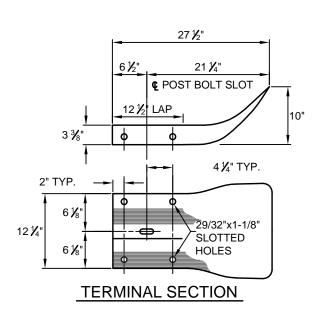
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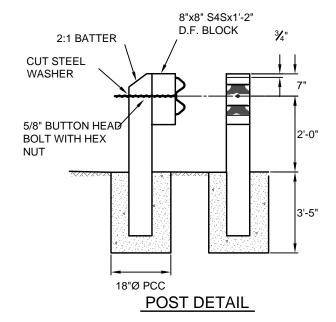
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METAL BEAM BARRICADE





NOTES

- 1. REFER TO STATE SPECIFICATIONS FOR LATEST GUARDRAIL STANDARDS.
- 2. USED ONLY WITH APPROVAL BY THE DEPARTMENT.
- 3. STANDARD "N2-RED RETROREFLECTIVE BACKGROUND WITH BLACK BORDER" MARKER TO BE BOLTED TO GUARD RAILING AS SHOWN.
- 4. 30"x30" W31 BOLTED TO 4x4 POST AND INSTALLED BEHIND BARRICADE PER STATE STANDARDS.
- 5. REFER TO STATE STANDARDS FOR SIGN REQUIREMENTS.

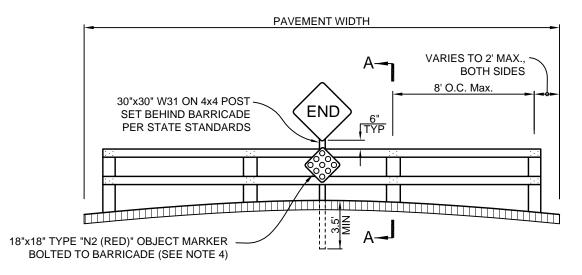
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS METAL BEAM BARRICADE

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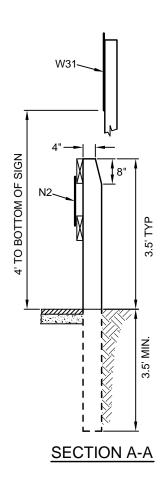
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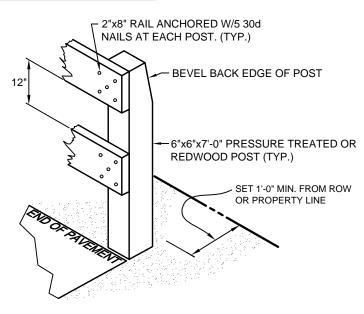
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WOOD BEAM BARRICADE





POST DETAIL

NOTES:

- RAILS TO BE 2"x8" CLEAR DOUGLAS FIR S4S AND POSTS TO BE 6"x6"x7'-0" PRESSURE TREATED OR REDWOOD.
- 2. BUTT ALL RAIL JOINTS TO CENTER OF POST.
- 3. ALL EXPOSED WOOD SHALL BE PAINTED EXTERIOR WHITE, 2 COATS.
- STANDARD "N2-RED RETROREFLECTIVE BACKGROUND WITH BLACK BORDER" MARKER TO BE LOCATED AS SHOWN (REFER TO STATE STANDARDS).
- 5. USED ONLY WITH THE APPROVAL OF THE DEPARTMENT WHERE BARRICADE WILL ONLY BE IN PLACE A MAXIMUM OF FIVE (5) YEARS.
- 6. REFER TO STATE STANDARDS FOR W-31 SIGN.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
TEMPORARY WOOD

BEAM BARRICADE

Issued:

Aug. 2006

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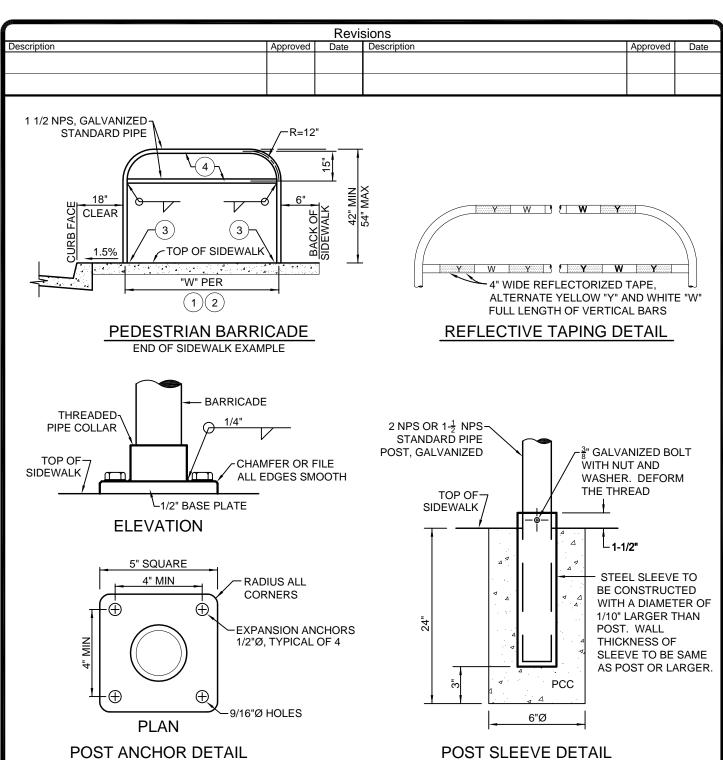
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POST ANCHOR DETAIL

FOR TEMPORARY INSTALLATIONS

NOTES:

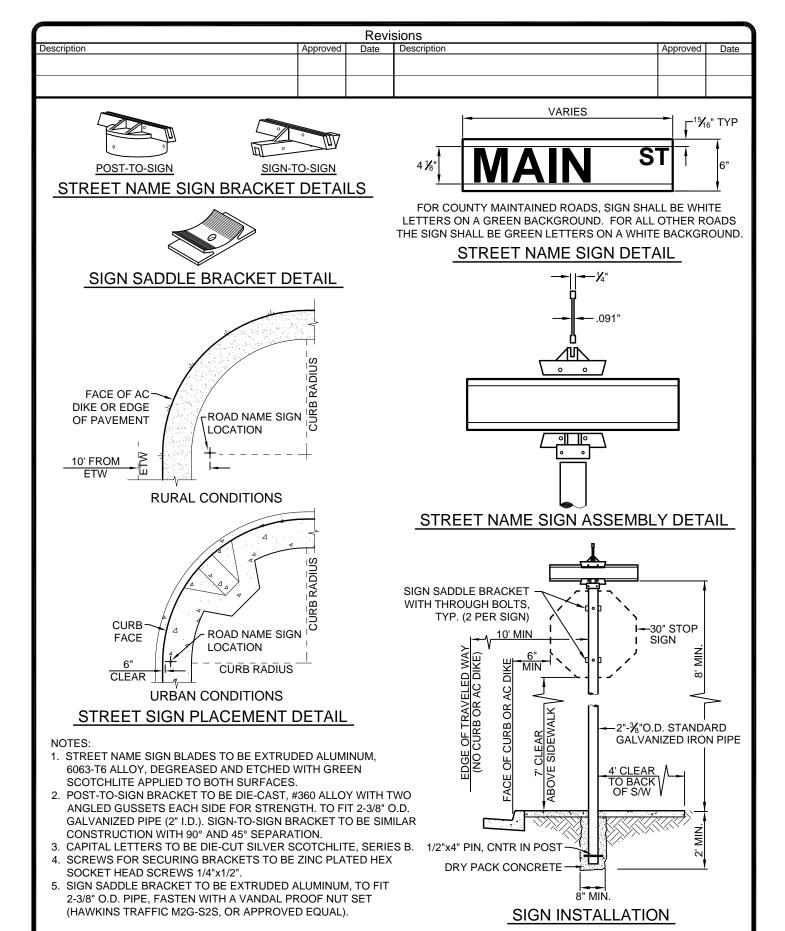
- 1. FOR END OF SIDEWALK APPLICATIONS THE PIPE POST SHALL BE 18-INCHES BEHIND FACE OF CURB AND 6-INCH INSIDE BACK OF SIDEWALK. "W" VARIES BASED ON SIDEWALK WIDTH.
- 2. TO RESTRICT CROSSINGS AT INTERSECTIONS, THE BARRICADE SHALL BE 18-INCHES BEHIND CURB FACE, "W" SHALL BE 6-FEET (UNLESS NOTED OTHERWISE), AND SIGNAGE SHALL BE PROVIDED TO DIRECT PEDESTRIANS.
- FOR TEMPORARY APPLICATIONS USE THE POST ANCHOR DETAIL FOR MOUNTING THE BARRICADE. FOR PERMANENT APPLICATIONS USE THE POST SLEEVE DETAIL.
- 4. WRAP BARRICADE RAILS WITH 4-INCH WIDE REFLECTIVE SAFETY TAPE, ALTERNATING YELLOW & WHITE PER DETAIL.
- 5. FOR MINIMUM PIPE DIAMETERS AND WALL THICKNESS, REFER TO ASTM A6M.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

SIDEWALK BARRICADE

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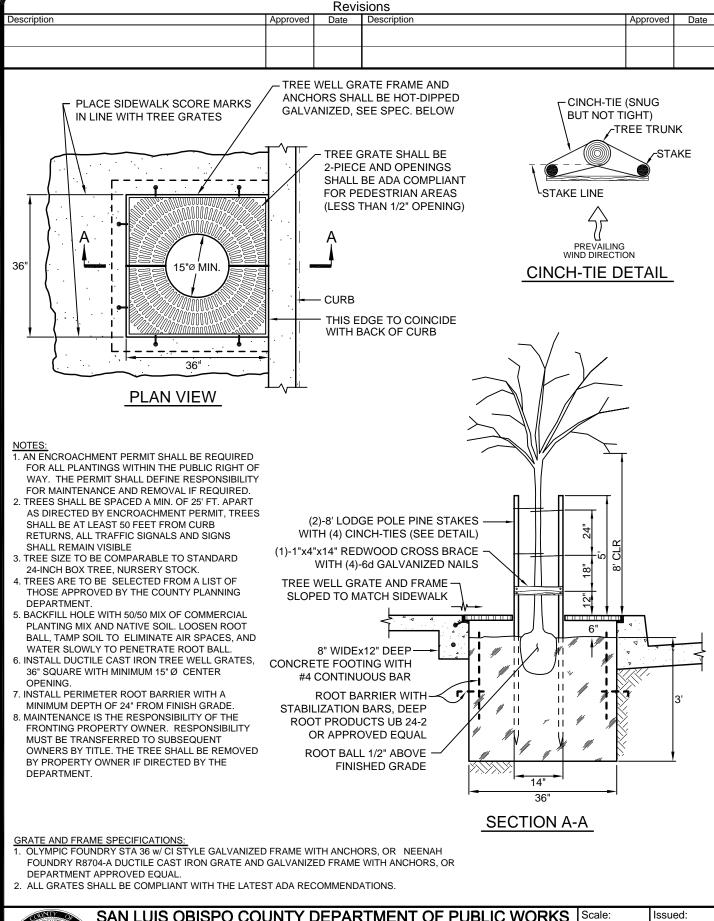
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SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

STANDARD STREET SIGN

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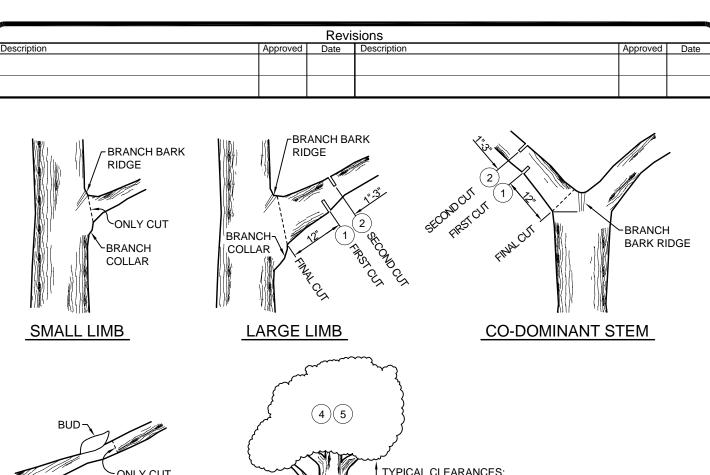


SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS SIDEWALK TREE PLANTER DETAIL

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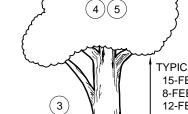
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TYPICAL CLEARANCES:

15-FEET CLEAR ABOVE ROADWAYS 8-FEET CLEAR ABOVE SIDEWALKS 12-FEET CLEAR ABOVE MULTIUSE TRAILS 13.5-FEET CLEAR ABOVE DRIVEWAYS (CDF)

NOTES:

- 1. FIRST CUT SHOULD BE TO A DEPTH OF 1/3 THE BRANCH DIAMETER.
- 2. SECOND CUT, LIMB SHOULD SPLIT AWAY CLEANLY.
- 3. REMOVAL OF LARGER LOWER BRANCHES SHOULD BE MINIMIZED TO AVOID:
 - A. MAKING THE TREE TOP HEAVY AND MORE SUSCEPTIBLE TO "BLOW OVERS",
 - B. REDUCING THE NUMBER OF LARGE BRANCH CUTS MINIMIZES TREE SUSCEPTIBILITY TO DISEASE.
 - C. PROVIDE WILDLIFE SHELTER.
 - D. RETAIN GROUND SHADE TO MAINTAIN SOIL MOISTURE UNDER THE TREE.
 - E. RETAIN THE NATURAL SHAPE OF THE TREE
- 4. REMOVAL OF THE CANOPY BRANCHES SHOULD BE DONE IN A SYMMETRICAL MANNER SO AS NOT TO UNBALANCE THE
- 5. TO MINIMIZE STRESS TO THE TREE LIMIT THE AMOUNT OF TRIMMING DONE IN ONE SEASON TO:
 - A. 10% OF CANOPY FOR OAK TREES
 - B. 25% OF CANOPY FOR OTHER SPECIES
- 6. 1/3 RULE:
 - A. NEVER REMOVE MORE THAN 1/3 OF A TREES CROWN.
 - B. ENCOURAGE SIDE BRANCHES THAT FORM ANGLES THAT ARE 1/3 OFF THE VERTICAL, THE 10:00 AND 2:00 O'CLOCK **POSITIONS**
 - C. FOR MOST DECIDUOUS TREES, DON'T PRUNE UP FROM THE BOTTOM ANY MORE THAN 1/3 OF THE TREE'S TOTAL HEIGHT.
- 7. AFTER PRUNING, IT IS NOT NECESSARY TO USE A WOUND DRESSING. WOUND DRESSINGS HAVE NOT BEEN SHOWN TO IMPROVE THE RECOVERY OF THE TREE, AND IN SOME CASES DO ACTUAL DAMAGE TO THE TREE.
- 8. TREE TRIMMING SHOULD OCCUR ONLY OCCUR DURING THE DRY SEASON AND AT THE DIRECTION OF THE PROJECT ARBORIST.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH RECOGNIZED STANDARDS OF GOOD ARBORICULTURAL PRACTICES.
- 10. THOROUGHLY CLEAN EQUIPMENT PRIOR TO COMMENCING WORK AND BETWEEN TRIMMING SEPARATE TREES.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

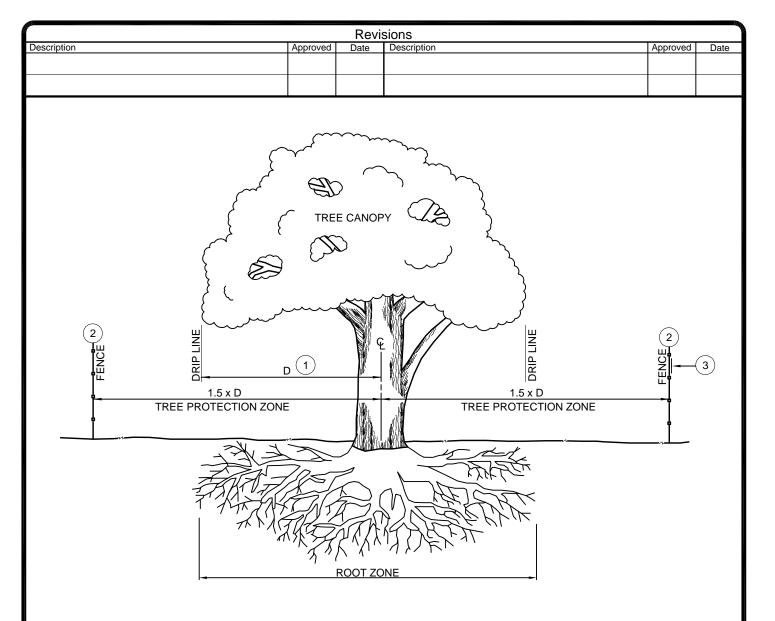
TREE TRIMMING METHODS

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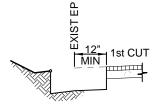
- 1. "D" EQUALS THE GREATEST MEASURED DISTANCE FROM THE CENTER OF THE TREE TRUNK TO THE FURTHEST POINT OF THE TREE CANOPY (DRIP LINE).
- 2. TREE PROTECTION FENCING SHALL BE ORANGE PLASTIC "SNOW FENCE" OR APPROVED EQUAL, A MINIMUM OF 3-FEET HIGH, AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- 3. AT LEAST ONE (1) WEATHERPROOF SIGN SHALL BE PLACED ON EACH FENCED AREA AND IN A VISIBLE LOCATION. THE SIGN SHALL READ "TREE PROTECTION AREA STAY OUT" WITH LETTER SIZE NO LESS THAN 4-INCHES TALL. FOR LARGER FENCED AREAS SIGNS SHALL BE PLACED AT NO FURTHER THAN 50-FEET APART.
- 4. PRIOR TO COMMENCING WORK, TREE PROTECTION FENCING SHALL BE INSTALLED AT ALL TREES IDENTIFIED TO BE EITHER PROTECTED OR IMPACTED, AND AT ALL TREES WHICH ARE WITHIN 50-FEET OF THE PERMITTED WORK ACTIVITIES.
- 5. FOR APPROVED CHANGES TO THE LIMITS OF WORK, TREE PROTECTION FENCING SHALL BE MODIFIED PER NOTE 4.
- 6. WHERE WORK IS PERMITTED WITHIN THE TREE PROTECTION ZONE (IMPACTED TREES) ALL EFFORTS SHALL BE MADE (AND IDENTIFIED ON PLANS) TO MINIMIZE ENCROACHMENT AND IMPACT TO THE ROOT ZONE. THIS MAY REQUIRE THAT ALL WORK BE DONE BY HAND AND UNDER THE DIRECTION OF THE PROJECT ARBORIST.
- 7. ADDITIONAL TREE PROTECTION REQUIREMENTS MAY BE REQUIRED PER THE DESIGN STANDARDS AND/OR WHEN LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY.



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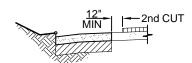
STEP 1: SAWCUT PER NOTE 1 AND REMOVE MATERIAL TO REQUIRED DEPTH.



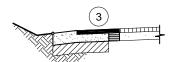
STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.



STEP 2: CONSTRUCT NEW SUBGRADE & BASE PER DEPARTMENT APPROVED SECTION.

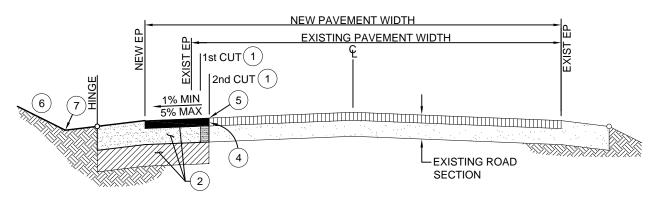


STEP 3: SAWCUT PER NOTE 1 TO REMOVE AN ADDITIONAL 12" MIN OF ASPHALT SURFACE



STEP 5: PAVE ROADWAY PER DEPARTMENT APPROVED SECTION.

WIDENING PROCEDURE



TYPICAL RURAL ROAD WIDENING SECTION

NOTES:

- 1. SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF PAVEMENT AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO CENTERLINE, OUTSIDE THE NORMAL VEHICLE TIRE PATH WITHIN A TRAVEL LANE, AND SHALL NOT BE ALLOWED WITHIN DESIGNATED BICYCLE LANES. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- 2. THE STRUCTURAL ROAD WIDENING SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT. IF THE EXISTING ROAD STRUCTURAL SECTION IS GREATER THAN THE DETERMINED ROAD STRUCTURAL SECTION, THEN THE EXISTING STRUCTURAL SECTION THICKNESS SHALL BE MATCHED. TYPICAL ROAD WIDENING SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

2//// 12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

- 3. NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED). WHERE EXISTING PAVEMENT IS 3.5-INCHES THICK OR GREATER SEE STANDARD DRAWING R-1a FOR RURAL ROAD WIDENING REQUIREMENTS.
- 4. A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING
- 5. AFTER PAVING, APPLY "CRAFCO SUPERFLEX" TO ALL SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- CUT AND FILL SLOPES BEYOND ROADWAY HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- 8. ROAD SECTIONS WITH ASPHALT CONCRETE DIKE (REFER TO STANDARD DRAWING C-3) SHALL BE REQUIRED BY THE DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER.



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

RURAL ROAD WIDENING

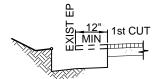
EXISTING AC PAVEMENT LESS THAN 3.5" THICK

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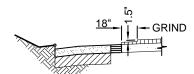
STEP 1: SAWCUT PER NOTE 1 AND REMOVE MATERIAL TO REQUIRED DEPTH.



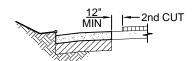
STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.



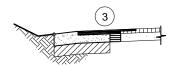
STEP 2: CONSTRUCT NEW SUBGRADE & BASE PER DEPARTMENT APPROVED SECTION.



STEP 5: WHEN EXISTING AC IS **P** 3.5" THICK, GRIND 18" WIDE x 1.5" DEEP OF OFF EXISTING ASPHALT SURFACE.

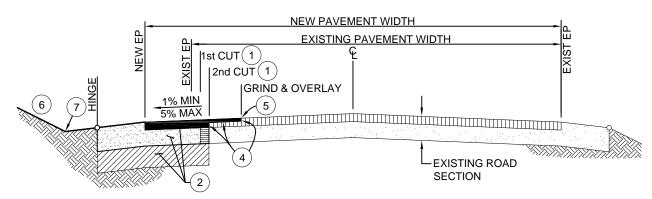


STEP 3: SAWCUT PER NOTE 1 TO REMOVE AN ADDITIONAL 12" MIN OF ASPHALT SURFACE



STEP 6: PAVE ROADWAY PER DEPARTMENT APPROVED SECTION (MAXIMUM OF 3" AC LIFT COMPACTED, MINIMUM 2 LIFTS).

WIDENING PROCEDURE



TYPICAL RURAL ROAD WIDENING SECTION

NOTES:

- 1. SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF PAVEMENT AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO CENTERLINE, OUTSIDE THE NORMAL VEHICLE TIRE PATH WITHIN A TRAVEL LANE, AND SHALL NOT BE ALLOWED WITHIN DESIGNATED BICYCLE LANES. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- 2. THE STRUCTURAL ROAD WIDENING SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT. IF THE EXISTING ROAD STRUCTURAL SECTION IS GREATER THAN THE DETERMINED ROAD STRUCTURAL SECTION, THEN THE EXISTING STRUCTURAL SECTION THICKNESS SHALL BE MATCHED. TYPICAL ROAD WIDENING SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

- 3. NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED), WITH A MINIMUM LIFT NOT LESS THAN 1.5-INCHES.
- 4. A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- 5. AFTER PAVING, APPLY "CRAFCO SUPERFLEX" TO ALL SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- CUT AND FILL SLOPES BEYOND ROADWAY HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.
- 7. THE PROJECT ENGINEER SHALL ACCOMMODATE FOR ROADSIDE DRAINAGE SUCH THAT IT DOES NOT ERODE THE AGGREGATE SHOULDER. DESIGN AND CONSTRUCTION SHALL BE TO THE SATISFACTION OF THE DEPARTMENT.
- ROAD SECTIONS WITH ASPHALT CONCRETE DIKE (REFER TO STANDARD DRAWING C-3) SHALL BE REQUIRED BY THE
 DEPARTMENT WHERE NEEDED TO CONTROL DRAINAGE OR EROSION AND ON LONGITUDINAL GRADES OF 3% OR GREATER.



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

RURAL ROAD WIDENING

EXISTING AC PAVEMENT 3.5" THICK OR GREATER

Scale: NTS

Issued: Aug. 2006

Drawing No:

R-1a

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STEP 1: SAWCUT PER NOTE 1 AND REMOVE MATERIAL TO REQUIRED DEPTH.



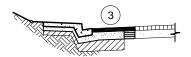
STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.



STEP 2: CONSTRUCT NEW SUBGRADE & BASE PER DEPARTMENT APPROVED SECTION.

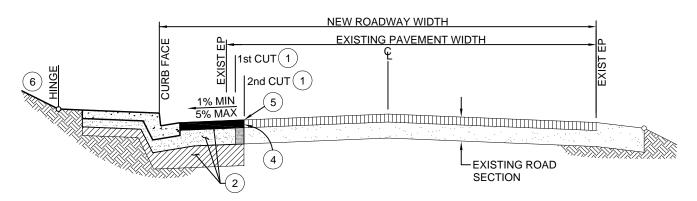


STEP 3: SAWCUT PER NOTE 1 TO REMOVE AN ADDITIONAL 12" MIN OF ASPHALT SURFACE



STEP 6: PAVE ROADWAY PER DEPARTMENT APPROVED SECTION.

WIDENING PROCEDURE



TYPICAL URBAN STREET WIDENING SECTION

NOTES:

- 1. SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF PAVEMENT AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO CENTERLINE, OUTSIDE THE NORMAL VEHICLE TIRE PATH WITHIN A TRAVEL LANE, AND SHALL NOT BE ALLOWED WITHIN DESIGNATED BICYCLE LANES. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- 2. THE STRUCTURAL ROAD WIDENING SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT. IF THE EXISTING ROAD STRUCTURAL SECTION IS GREATER THAN THE DETERMINED ROAD STRUCTURAL SECTION, THEN THE EXISTING STRUCTURAL SECTION THICKNESS SHALL BE MATCHED. TYPICAL ROAD WIDENING SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

- 3. NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED). WHERE EXISTING PAVEMENT IS 3.5-INCHES THICK OR GREATER SEE STANDARD DRAWING R-2a FOR RURAL ROAD WIDENING REQUIREMENTS.
- 4. A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- 5. AFTER PAVING, APPLY "CRAFCO SUPERFLEX" TO ALL SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- 6. CUT AND FILL SLOPES BEYOND ROADWAY HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

URBAN STREET WIDENING

EXISTING AC PAVEMENT LESS THAN 3.5" THICK

Scale: Issued:

NTS Aug. 2006

Drawing No:

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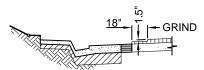
STEP 1: SAWCUT PER NOTE 1 AND REMOVE MATERIAL TO REQUIRED DEPTH.



STEP 4: RECOMPACT EXISTING BASE SECTION TO 95% RELATIVE COMPACTION.



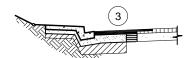
STEP 2: CONSTRUCT NEW SUBGRADE & BASE PER DEPARTMENT APPROVED SECTION.



STEP 5: WHEN EXISTING AC IS P 3.5" THICK, GRIND 18" WIDE x 1.5" DEEP OF OFF EXISTING ASPHALT SURFACE.

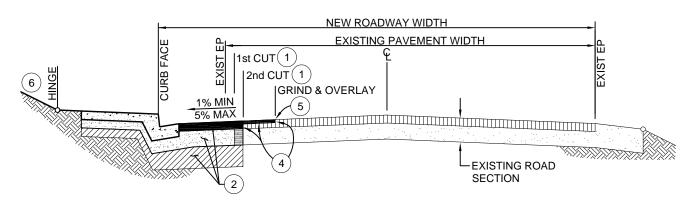


STEP 3: SAWCUT PER NOTE 1 TO REMOVE AN ADDITIONAL 12" MIN OF ASPHALT SURFACE



STEP 6: PAVE ROADWAY PER DEPARTMENT APPROVED SECTION (MAXIMUM OF 3" AC LIFT COMPACTED. MINIMUM 2 LIFTS).

WIDENING PROCEDURE



TYPICAL URBAN STREET WIDENING SECTION

NOTES:

- 1. SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF PAVEMENT AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO CENTERLINE, OUTSIDE THE NORMAL VEHICLE TIRE PATH WITHIN A TRAVEL LANE, AND SHALL NOT BE ALLOWED WITHIN DESIGNATED BICYCLE LANES. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- THE STRUCTURAL ROAD WIDENING SECTION SHALL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON THE SUBGRADE R-VALUE AND THE TRAFFIC INDEX (TI) AS PROVIDED BY THE DEPARTMENT. IF THE EXISTING ROAD STRUCTURAL SECTION IS GREATER THAN THE DETERMINED ROAD STRUCTURAL SECTION, THEN THE EXISTING STRUCTURAL SECTION THICKNESS SHALL BE MATCHED. TYPICAL ROAD WIDENING SECTION SHALL BE:

lacksquare ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION. OVER

12" MINIMUM SUBGRADE TO 95% RELATIVE COMPACTION

3. NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED), WITH A MINIMUM LIFT NOT LESS THAN 1.5-INCHES.

- A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- 5. AFTER PAVING, APPLY "CRAFCO SUPERFLEX" TO ALL SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- 6. CUT AND FILL SLOPES BEYOND ROADWAY HINGE POINTS SHALL NOT EXCEED 2 HORIZONTAL:1 VERTICAL (OR 3h:1v IN NATIVE SAND) WITHOUT PRIOR APPROVAL BY THE DEPARTMENT.



SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS **URBAN STREET WIDENING** EXISTING AC PAVEMENT 3.5" THICK OR GREATER

Scale: NTS Issued:

Aug. 2006

Drawing No.

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| | | | | | | | | | |
| NOTES: 1. WHEN REMOVING EXISTING CURB & GUTTE OR CONSTRUCTION OF A DRIVEWAY, CURE THE CURB & GUTTER, SIDEWALK, AND 24-If ROADWAY PAVEMENT SHALL BE SAWCUT A LALL SAWCUTTING SHALL BE DONE WITH AN THAT PROVIDES A CLEAN JOIN EDGE. SAW PERPENDICULAR OR PARALLEL TO EXISTIN SAWCUTTING SHALL BE DONE AT THE NEA OR WEAKENED PLANE JOINT FOR REMOVA CURB & GUTTER AND SIDEWALK SHALL BE RESPECTIVE COUNTY STANDARD. 4. WHEN REMOVING EXISTING CURB & GUTTER DRIVEWAYS, CURB RAMP, OR OTHER IMPRISHALL BE DONE AT THE NEAREST EXISTING WEAKENED PLANE JOINT FOR REMOVAL OF IMPROVEMENTS SHALL BE INSTALLED PER DRAWING. 5. THE ROAD STRUCTURAL SECTION ADJACE REPLACEMENT SHALL, AT A MINIMUM MATOR STRUCTURAL SECTION. THE DEPARTMENT PAVEMENT REQUIREMENTS. COMPACTION SHALL BE REQUIRED BY THE DEPARTMENT OR SHALL BE REPLANED PLANE JOIN CONSTRUCTION JOINTS. | RAMP, OR O'NCHES MINIMINAND REMOVED IN ABRASIVE TO CUTTING SHAIG CURB & GUER AND/OR SI REST EXISTIN LOF ENTIRE FOR AND SIDEW OVEMENTS TO SEXPANSION FENTIRE PANT TO THE RESPENT TO THE EXIST MAY IMPOSE ITESTS ON THE PRIOR TO PASE REPLACED | THER IMPROVEI JM OF ADJACEN D. YPE CUTTING W ALL ALWAYS BE JTTER AND SIDE DEWALK, IG EXPANSION J PANEL(S). NEW ED TO THE JALK TO INSTAL HEN SAWCUTTII JOINT OR IEL(S). NEW ECTIVE STANDA EPAIR OR ING ROAD E ADDITIONAL HE BASE MATER AVING. PER STANDARD | MENT IT HEEL WALK. OINT / L NEW NG RD -2' M | EJ J J J J J J J J J J J J J J J J J J | | | | | |
| REPAIR REQUIREMENTS: 1. REPAIR OF EXISTING IMPROVEMENTS SHAI REQUIRED WHEN THE VERTICAL DIFFEREN (LIFT) IS 1/4" OR GREATER, AND/OR THE HO DIFFERENTIAL (GAP) IS 1/2" OR GREATER, OR REQUIRED BY THE DEPARTMENT. | ITIAL PRIZONTAL | STANDA | VITH NEW EJ PER RD DRAWING C-1, CAL BOTH SIDES. | EXIST CURB & GUTTER AND SIDEWALK | EXIST WP | พ | | | |
| | | _ | ISTING WPJ WITH TRUCTION JOINT. | | DOWELS TYPICAL | \ 1 | | | |
| 1/4" TO 1/2" RADIUS 9" " NEW EXIST | | PANEL WHEN F | REPLACE ENTIRE - REPAIRING CURB, ND/OR SIDEWALK | 4 4 | EXIST WP | , | | | |
| DRILL 9" INTO EXISTING AND EPOXY #4 DOWELS #4 DOWELS x 18" EQUALLY EMBI | | | EJ WITH NEW EJ RD DRAWING C-1. | | EXIST EJ | | | | |
| INTO BOTH NEW AND EXISTING #4 DOWELS, 1 EACH IN GUTTER, 1 EACH IN C FACE, AND 1 EVERY 18" ON-CENTER IN SIDEN AND OTHER FLATWORK | | | | | EXIST WP | - ₅ 7 | | | |
| CONSTRUCTION (COLD) JOINT AT SAW | CUT_ | | | | : | | | | |

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS CURB, GUTTER & SIDEWALK REPAIR

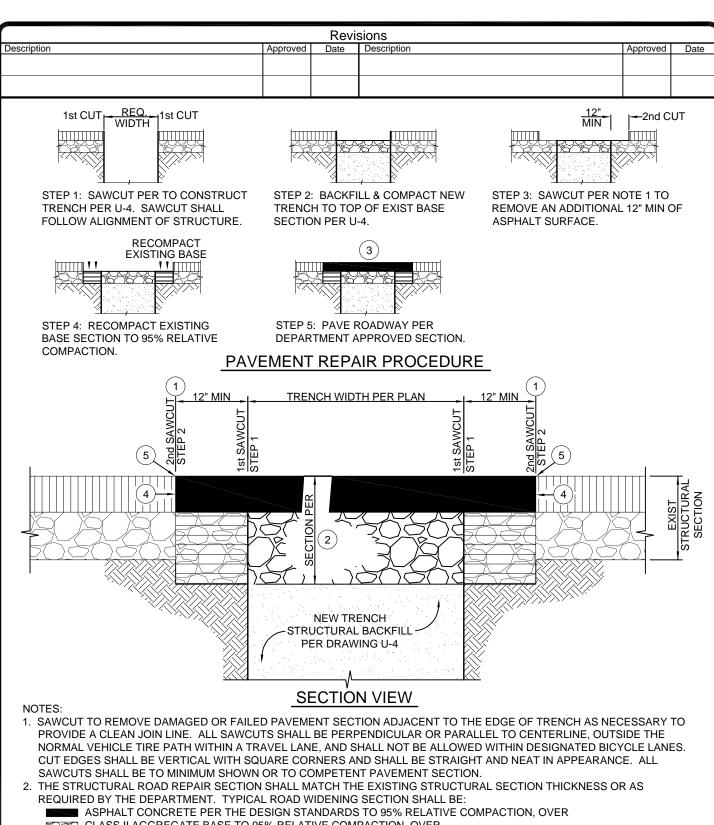
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1 of 1

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ECCC CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

TRENCH SECTION PER DRAWING U-4 (STRUCTURAL BACKFILL TO 95% MIN RELATIVE COMPACTION)

- 3. NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED). WHERE EXISTING PAVEMENT IS 3.5-INCHES THICK OR GREATER SEE STANDARD DRAWING R-4a FOR TRENCH REPAIR REQUIREMENTS.
- 4. A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- 5. AFTER PAVING, APPLY "CRAFCO SUPERFLEX" TO ALL SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- 6. THE DEPARTMENT SHALL PROVIDE ADDITIONAL REQUIREMENTS WHEN TRENCHING IN EXISTING ROADS HAVING CONCRETE STRUCTURAL SECTIONS.

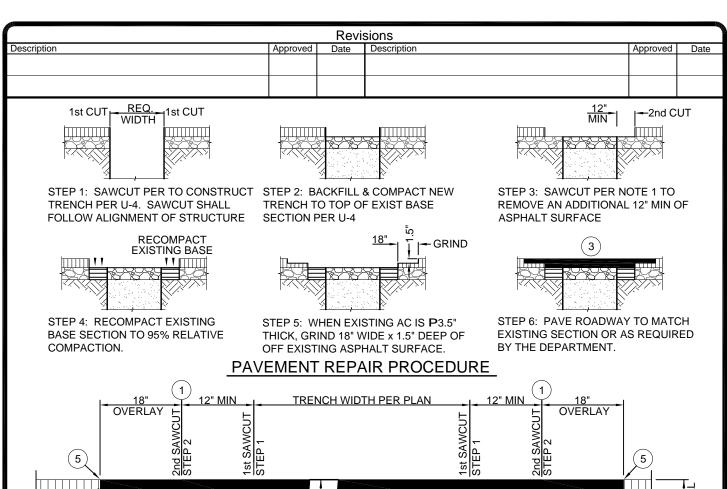


SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS TRENCH REPAIR EXISTING AC PAVEMENT LESS THAN 3.5" THICK

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TRENCH WIDTH PER PLAN TRENCH WIDTH PER PLAN

NOTES:

- 1. SAWCUT TO REMOVE DAMAGED OR FAILED PAVEMENT SECTION ADJACENT TO THE EDGE OF TRENCH AS NECESSARY TO PROVIDE A CLEAN JOIN LINE. ALL SAWCUTS SHALL BE PERPENDICULAR OR PARALLEL TO CENTERLINE, OUTSIDE THE NORMAL VEHICLE TIRE PATH WITHIN A TRAVEL LANE, AND SHALL NOT BE ALLOWED WITHIN DESIGNATED BICYCLE LANES. CUT EDGES SHALL BE VERTICAL WITH SQUARE CORNERS AND SHALL BE STRAIGHT AND NEAT IN APPEARANCE. ALL SAWCUTS SHALL BE TO MINIMUM SHOWN OR TO COMPETENT PAVEMENT SECTION.
- 2. THE STRUCTURAL ROAD REPAIR SECTION SHALL MATCH THE EXISTING STRUCTURAL SECTION THICKNESS OR AS REQUIRED BY THE DEPARTMENT. TYPICAL ROAD WIDENING SECTION SHALL BE:

ASPHALT CONCRETE PER THE DESIGN STANDARDS TO 95% RELATIVE COMPACTION, OVER CLASS II AGGREGATE BASE TO 95% RELATIVE COMPACTION, OVER

TRENCH SECTION PER DRAWING U-4 (STRUCTURAL BACKFILL TO 95% MIN RELATIVE COMPACTION)

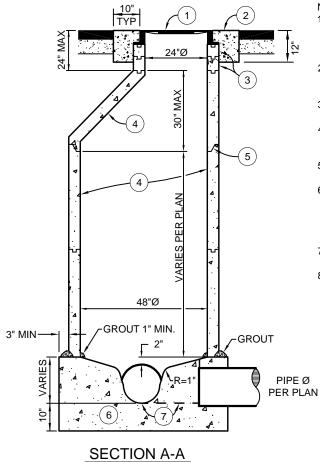
- 3. NEW PAVEMENT SHALL BE PLACED IN LIFTS NOT EXCEEDING 3-INCHES (COMPACTED), WITH A MINIMUM LIFT NOT LESS THAN 1.5-INCHES.
- 4. A TACK COAT SHALL BE APPLIED TO ALL HORIZONTAL AND VERTICAL CONFORM SURFACES PRIOR TO PAVING.
- 5. AFTER PAVING, APPLY "CRAFCO SUPERFLEX" TO ALL SURFACE SEAMS PER MANUFACTURER'S RECOMMENDATIONS.
- 6. THE DEPARTMENT SHALL PROVIDE ADDITIONAL REQUIREMENTS WHEN TRENCHING IN EXISTING ROADS HAVING CONCRETE STRUCTURAL SECTIONS.

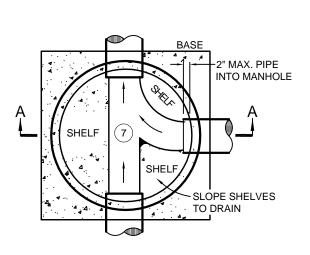


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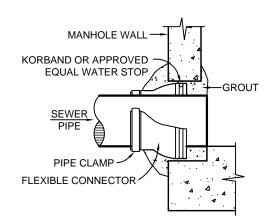




PLAN VIEW

NOTES:

- MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24" Ø OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL HAVE A BLIND PICKHOLE, WATERTIGHT GASKET, AND BE LETTERED "SANITARY SEWER".
- 2. COLLAR SHALL BE CLASS A PORTLAND CEMENT CONCRETE, TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
- 3. PROVIDE 3" OR 6" (9" MAX) ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE.
- PRECAST SHAFT(S) AND ECCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
- JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
- 6. MANHOLE BASE SHALL BE PORTLAND CEMENT CONCRETE PER THE DESIGN STANDARDS, AND REST UPON UNDISTURBED MATERIAL. BOTTOM SHAFT SHALL BE WET-SET OR SET IN FORMED GROOVE. PRECAST BASES MAY BE USED WITH PRIOR APPROVAL OF THE DEPARTMENT AND SHALL MEET ASTM C-478 61T.
- 7. CONCRETE CHANNEL SHALL BE STEEL TROWEL FINISH AND SHELF AREAS SHALL BE MONOLITHICALLY PLACED.
- 8. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



TYPICAL CONNECTION DETAIL



PINKERTON A-640 WITH SKID RESISTANT SURFACE, BLIND PICKHOLE, WATER TIGHT GASKET, AND HS-20 TRAFFIC LOADING, OR APPROVED EQUAL, MARKED "SANITARY SEWER"

LID DETAIL

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

SEWER MANHOLE

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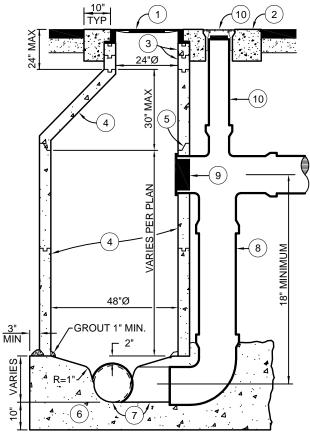
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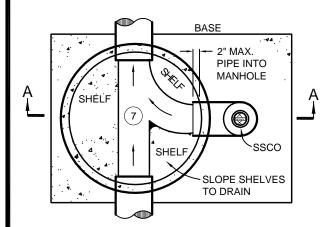
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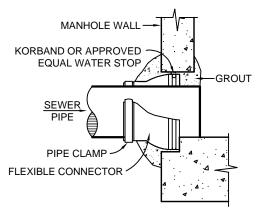




PLAN VIEW

NOTES:

- MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM 24" Ø
 OPENING AND CONFORM TO HS-20 TRAFFIC LOADING. LID SHALL
 HAVE A BLIND PICKHOLE, WATERTIGHT GASKET, AND BE
 LETTERED "SANITARY SEWER".
- COLLAR SHALL BE CLASS A PORTLAND CEMENT CONCRETE, TROWELLED TO STREET GRADE, AND ALLOWED TO CURE 48 HOURS PRIOR TO FULL TRAFFIC USE.
- PROVIDE 3" OR 6" (9" MAX) ADJUSTING RINGS AS NEEDED, GROUTED ON THE INSIDE.
- PRECAST SHAFT(S) AND ECCENTRIC CONE SHALL MEET ASTM C-478 61T FOR CLASS 2 REINFORCED CONCRETE PIPE, OR AS APPROVED BY THE DEPARTMENT.
- JOINTS SHALL BE WATERTIGHT, SET WITH BUTYL RUBBER SEALANT (RUB'R-NEK OR EQUAL).
- 6. MANHOLE BASE SHALL BE PORTLAND CEMENT CONCRETE PER DESIGN STANDARDS, AND REST UPON UNDISTURBED MATERIAL. BOTTOM SHAFT SHALL BE WET-SET OR SET IN FORMED GROOVE. PRECAST BASES MAY BE USED WITH PRIOR APPROVAL OF THE DEPARTMENT AND SHALL MEET ASTM C-478 61T.
- CONCRETE CHANNEL SHALL BE STEEL TROWEL FINISH AND SHELF AREAS SHALL BE MONOLITHICALLY PLACED.
- LATERAL CONNECTION OVER 5' TO BE P.V.C. FOR DROP TEE, PIPE, AND 90° BEND.
- 9. INSTALL REMOVABLE PLUG.
- 10. SEWER CLEANOUT BOX PER STANDARD DRAWING S-2.
- 11. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.



TYPICAL CONNECTION DETAIL



PINKERTON A-640 WITH SKID RESISTANT SURFACE, BLIND PICKHOLE, WATER TIGHT GASKET, AND HS-20 TRAFFIC LOADING, OR APPROVED EQUAL, MARKED "SANITARY SEWER"

LID DETAIL

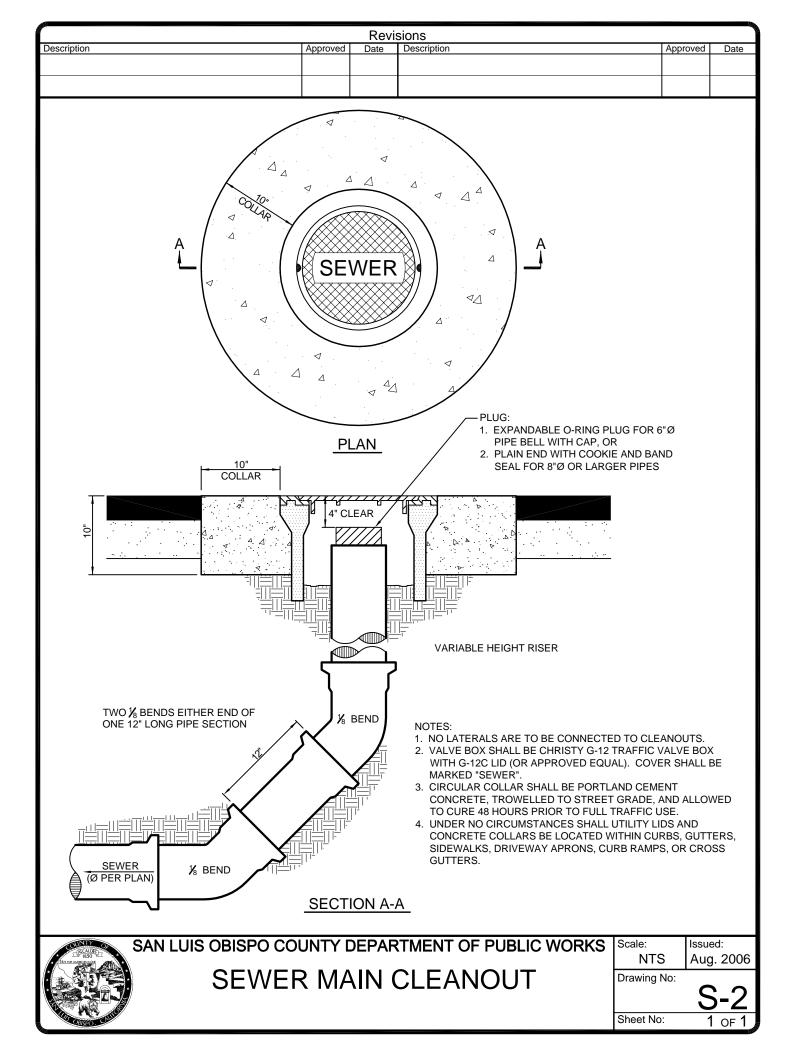
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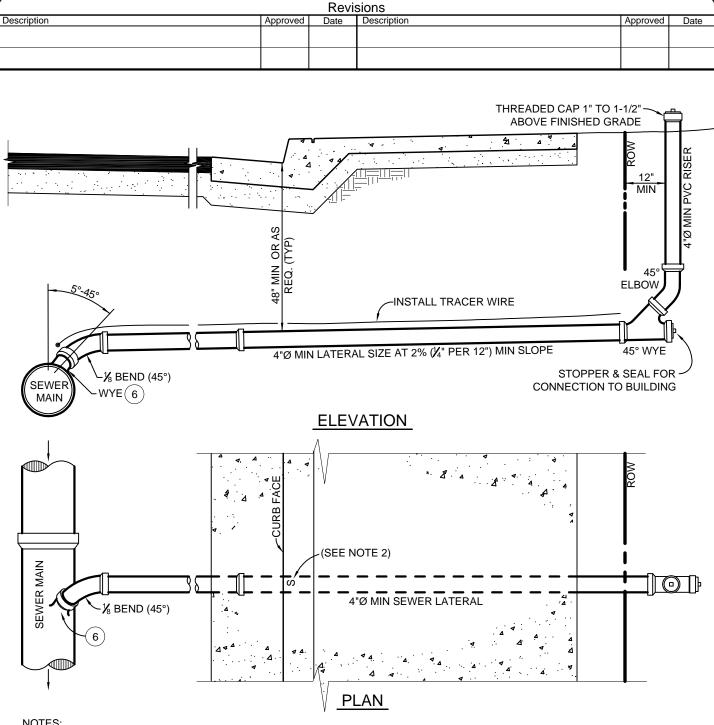
SEWER DROP MANHOLE

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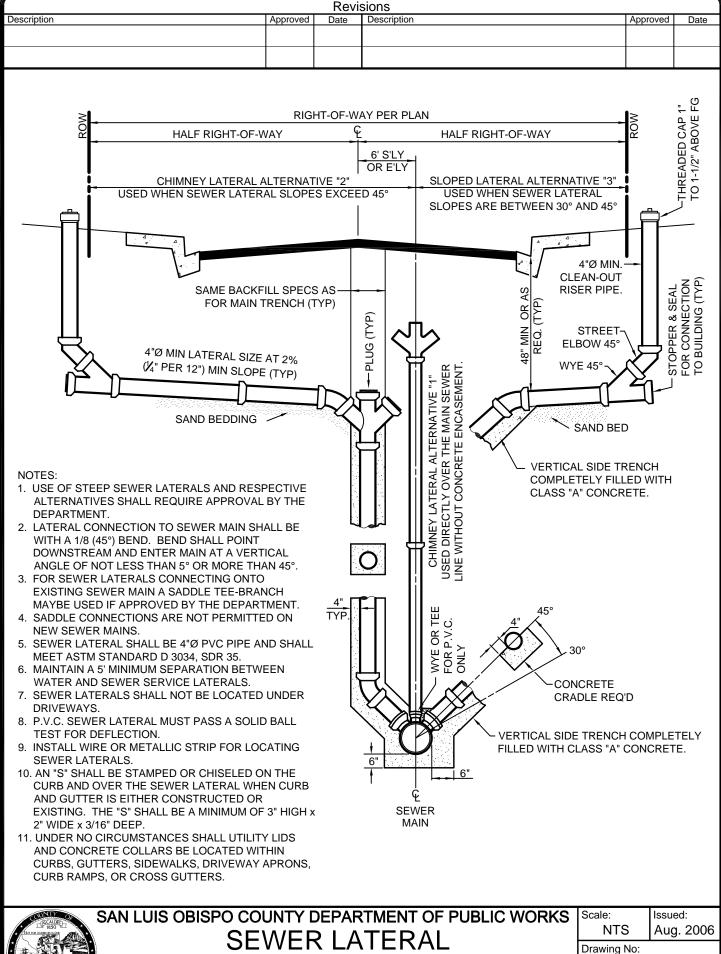


- 1. SEWER LATERAL SHALL BE 4"Ø PVC PIPE AND SHALL MEET ASTM STANDARD D 3034, SDR 35.
- 2. AN "S" SHALL BE STAMPED OR CHISELED ON THE CURB OVER THE SEWER LATERAL WHEN CURB AND GUTTER IS EITHER CONSTRUCTED OR EXISTING. THE "S" SHALL BE A MINIMUM OF 3" HIGH x 2" WIDE x 3/16" DEEP.
- 3. MAINTAIN A 5' MINIMUM SEPARATION BETWEEN WATER AND SEWER SERVICE LATERALS.
- 4. SEWER LATERALS SHALL NOT BE LOCATED UNDER DRIVEWAYS.
- 5. SADDLE CONNECTIONS ARE NOT PERMITTED ON NEW SEWER MAINS.
- 6. FACTORY-FABRICATED WYE IN SEWER MAIN WITH 1/8 (45°) BEND. BEND SHALL POINT DOWNSTREAM AND ENTER MAIN AT A VERTICAL ANGLE OF NOT LESS THAN 5° OR MORE THAN 45°. FOR SEWER LATERALS CONNECTING ONTO EXISTING SEWER MAIN A SADDLE TEE-BRANCH MAYBE USED IF APPROVED BY THE DEPARTMENT.
- 7. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

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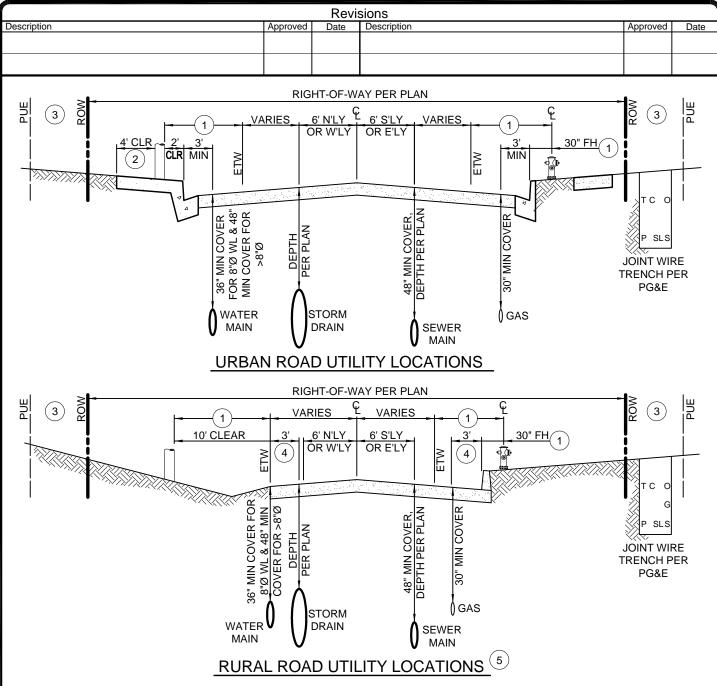
SEWER LATERAL

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SEWER LATERAL FOR DEEP MAINS

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- ABOVE GRADE OBSTACLES (UTILITY POLES, LIGHT STANDARDS, ETC) SHALL BE LOCATED AT LEAST 10-FEET CLEAR FROM THE EDGE OF TRAVELED WAY, OR 24-INCHES CLEAR FROM FACE OF CURB OR AC DIKE (FIRE HYDRANTS SHALL BE LOCATED PER DRAWING W-2, SIGNS SHALL BE LOCATED PER M-4).
- 2. PROVIDE 4-FOOT UNOBSTRUCTED CLEARANCE BETWEEN ALL ABOVE GRADE OBSTACLES AND THE BACK OF SIDEWALK (MAY REQUIRE ADDITIONAL SIDEWALK WIDENING).
- 3. LOCATE UTILITY VAULTS, METER BOXES, PEDESTALS, TRANSFORMERS, ETC. WITHIN PUE AND NOT WITHIN THE SIDEWALK.
- 4. FOR RURAL ROAD CONDITIONS, GAS AND WATER LINES SHALL BE LOCATED AT 3-FEET OFF FACE OF DIKE OR AT EDGE OF PAVEMENT.
- 5. THE DEPARTMENT MAY REQUIRE URBAN ROAD UTILITY STANDARD LOCATIONS FOR RURAL ROADS.
- 6. STREET CROSSINGS OF WIRE AND GAS UTILITIES SHALL REQUIRE A MINIMUM 30" OF COVER AND SHALL BE AT RIGHT ANGLES TO THE ROADWAY CENTERLINE.
- 7. ABOVE GRADE UTILITY APPURTENANCES SHALL BE LOCATED AS TO MEET DEPARTMENT SIGHT DISTANCE REQUIREMENTS (REFER TO A-5 SERIES DRAWINGS).
- 8. REFER TO STANDARD DRAWING U-2 FOR LOCATION OF SERVICE LATERALS AND WATER METER BOXES.
- 9. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

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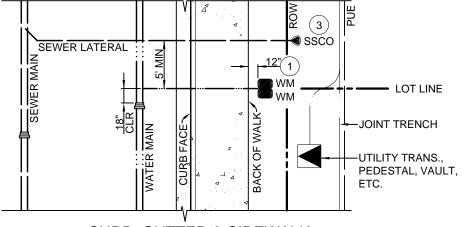
LOCATION OF UTILITIES

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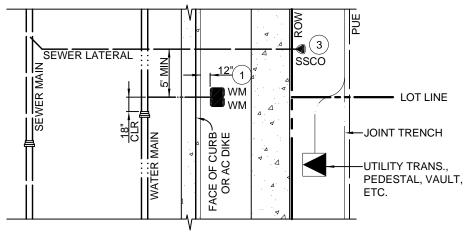
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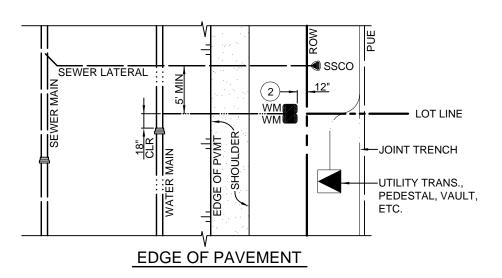
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CURB, GUTTER & SIDEWALK



CURB OR AC DIKE ONLY OR DETACHED SIDEWALK



NOTES:

- LOCATE WATER METER VAULT 12" BEHIND BACK OF CURB OR BACK OF AC DIKE.
- LOCATE WATER METER VAULT 12" INSIDE RIGHT-OF-WAY.
- SEWER CLEAN-OUTS SHALL BE LOCATED OUTSIDE OF SIDEWALK AND DRIVEWAY AREAS.
- ALL WATER METER VAULTS (BOXES) SHALL BE PER STANDARD DRAWINGS.
- 5. WIRE UTILITY JOINT TRENCH AND APPURTENANCES ARE SHOWN FOR REFERENCE ONLY. REFER TO THE RESPECTIVE UTILITY COMPANY'S HANDOUT PACKAGE FOR ACTUAL ALIGNMENTS AND CONSTRUCTION REQUIREMENTS.
- 6. WATER AND SEWER SERVICE
 LATERALS SHALL BE
 PERPENDICULAR TO THEIR
 RESPECTIVE MAIN LINES FOR EASE
 OF LOCATION. ALL WATER LINE
 TRENCHES SHALL HAVE BOTH
 TRACE WIRE AND TAPE, REFER TO
 STANDARD TRENCH DRAWINGS.
- FOR UNPAVED AREAS, THE WATER METER BOX SHALL BE SET 1" TO 1-1/2" ABOVE FINISHED GRADE.

SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS

LOCATION OF SERVICE LATERALS

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THE "CALIFORNIA WATERWORKS STANDARDS" SETS FORTH THE MINIMUM SEPARATION REQUIREMENTS FOR WATER MAINS AND SEWER LINES AS CONTAINED IN SECTION 64630, TITLE 22, CALIFORNIA ADMINISTRATIVE CODE. THE FOLLOWING IS A SUMMARY OF THOSE REQUIREMENTS:

- 1. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE WATER MAINS AND SEWER LINES SHALL BE AT LEAST 10-FEET MEASURED FROM THE NEAREST EDGES OF THE FACILITIES.
- 2. PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST 12-INCHES ABOVE SANITARY SEWER LINES WHERE THESE LINES MUST CROSS MEASURED FROM THE NEAREST EDGES OF THE FACILITIES.
- 3. COMMON TRENCH: WATER MAINS AND SEWER LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH.
- 4. WHEN ADEQUATE PHYSICAL SEPARATION CANNOT BE ATTAINED, AN INCREASE IN THE FACTOR OF SAFETY SHOULD BE PROVIDED BY INCREASING THE STRUCTURAL INTEGRITY OF BOTH THE PIPE MATERIALS AND JOINTS.
- 5. LOCAL CONDITIONS MAY CREATE A SITUATION WHERE THERE IS NO ALTERNATIVE BUT TO INSTALL WATER MAINS OR SEWER LINES AT A DISTANCE LESS THAN THAT REQUIRED BY THE BASIC SEPARATION STANDARDS. IN SUCH CASES, ALTERNATIVE CONSTRUCTION CRITERIA AS SPECIFIED IN THIS STANDARD SHALL BE FOLLOWED.
- 6. DUE TO SPECIAL HAZARDS, INSTALLATIONS OF WATER MAINS AND SEWER LINES 24-INCHES DIAMETER OR LARGER SHALL BE REVIEWED AND APPROVED BY THE HEALTH AGENCY PRIOR TO CONSTRUCTION.
- 7. THE CONSTRUCTION CRITERIA SHOULD APPLY TO THE HOUSE LATERALS THAT CROSS ABOVE A PRESSURE WATER MAIN BUT NOT TO THOSE HOUSE LATERALS THAT CROSS BELOW A PRESSURE WATER MAIN.

ALTERNATIVE CRITERIA FOR CONSTRUCTION THE CONSTRUCTION CRITERIA FOR SEWER LINES OR WATER MAINS WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN AS CASE 1 & CASE 2 ON SHEETS 2 AND 3 OF U-3.

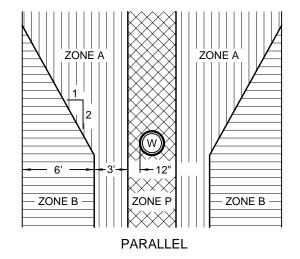
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
UTILITY SEPARATION CRITERIA

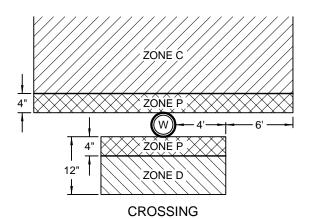
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| ZONE | SPECIAL CONSTRUCTION REQUIRED FOR SEWER: |
|------|--|
| А | SEWER LINES PARALLEL TO WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT APPROVAL FROM THE RESPONSIBLE HEALTH AGENCY AND WATER SUPPLIER. |
| В | A SEWER LINE PLACED PARALLEL TO A WATER LINE SHALL BE CONSTRUCTED OF: 1. CLASS 4000, TYPE II, ASBESTOS-CEMENT PIPE WITH RUBBER GASKET JOINTS. 2. PLASTIC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT. 3. CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS. 4. REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302-74). |
| С | A SEWER LINE <u>CROSSING</u> A WATER MAIN SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS. 2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE, OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED. 3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED. 4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE. |
| D | A SEWER LINE <u>CROSSING</u> A WATER MAIN SHALL BE CONSTRUCTED OF: 1. A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900) PLASTIC PIPE OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED. 3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-74) CENTERED OVER THE PIPE BEING CROSSED. 4. ANY SEWER PIPE WITHIN A CONTINUOUS SLEEVE. 5. ANY SEWER PIPE SEPARATED BY A 10-FOOT BY 10-FOOT, 4-INCH THICK REINFORCED CONCRETE SLAB. |
| Р | ZONE P IS A PROHIBITED ZONE, SECTION 64630(E)(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22. |

CASE 1: NEW SEWER MAIN

ALTERNATIVE CONSTRUCTION CRITERIA APPLIES TO NEW SEWER MAINS & NEW OR EXISTING WATER MAINS



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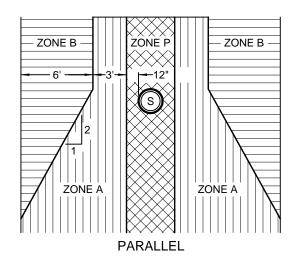
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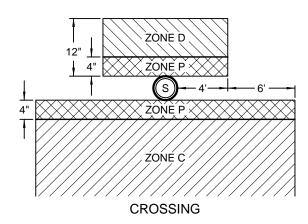
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| ZONE | SPECIAL CONSTRUCTION REQUIRED FOR WATER: |
|------|---|
| А | NO WATER MAINS PARALLEL TO SEWERS SHALL BE CONSTRUCTED WITHOUT APPROVAL FROM THE HEALTH AGENCY. |
| В | IF THE SEWER <u>PARALLELING</u> THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE B REQUIREMENTS, THE WATER MAIN SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT. |
| С | IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE C REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS IN ZONE C AND BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT. |
| D | IF THE SEWER CROSSING THE WATER MAIN DOES NOT MEET THE CASE 1, ZONE D REQUIREMENTS, THE WATER MAIN SHALL HAVE NO JOINTS WITHIN 4-FEET FROM EITHER SIDE OF THE SEWER AND SHALL BE CONSTRUCTED OF: 1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT. |
| Р | ZONE P IS A PROHIBITED ZONE, SECTION 64630(E)(2) CALIFORNIA ADMINISTRATIVE CODE, TITLE 22. |

CASE 2: NEW WATER MAIN

ALTERNATIVE CONSTRUCTION CRITERIA APPLIES TO NEW WATER MAINS OR EXISTING SEWER MAINS

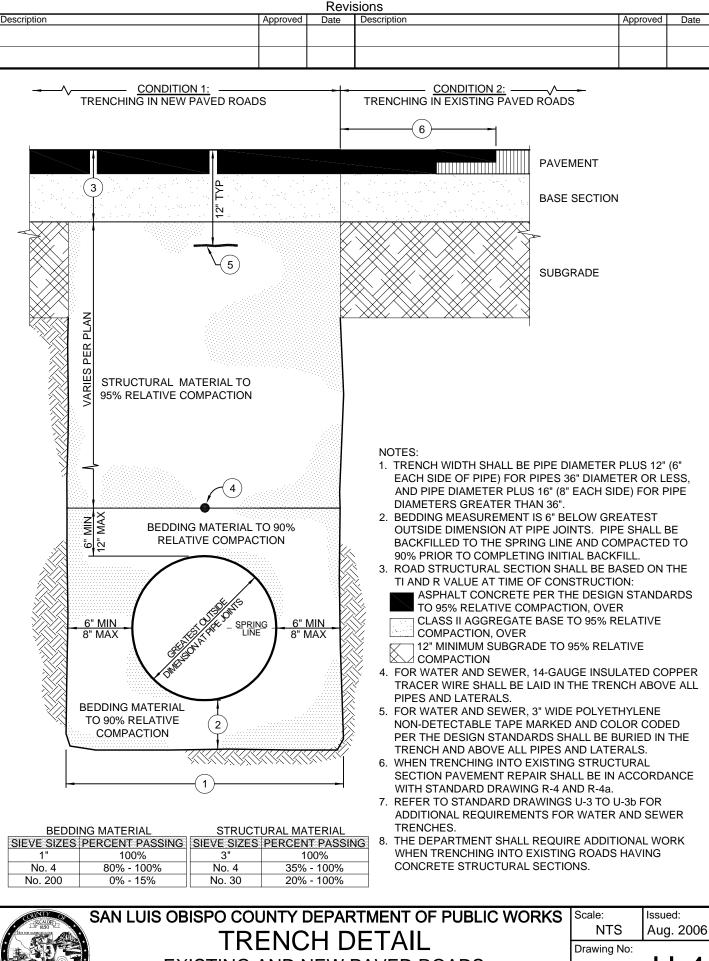


CASE 2: NEW WATER MAINS

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U-3b

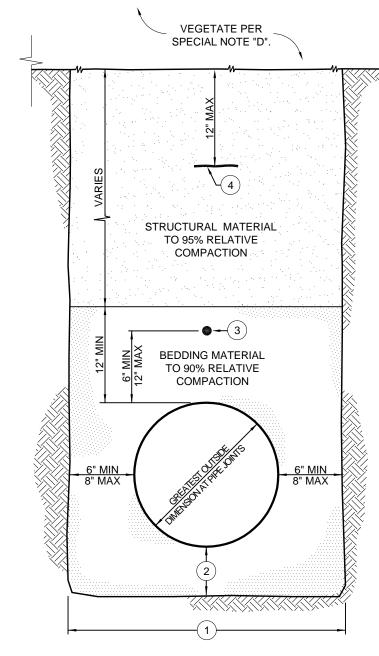


EXISTING AND NEW PAVED ROADS

1 of 1

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- TRENCH WIDTH SHALL BE PIPE DIAMETER PLUS 12" (6" EACH SIDE OF PIPE) FOR PIPES 36" DIAMETER OR LESS, AND PIPE DIAMETER PLUS 16" (8" EACH SIDE) FOR PIPE DIAMETERS GREATER THAN 36".
- 2. BEDDING MEASUREMENT IS 6" BELOW GREATEST OUTSIDE DIMENSION AT PIPE JOINTS. PIPE SHALL BE BACKFILLED TO THE SPRING LINE AND COMPACTED TO 90% PRIOR TO COMPLETING INITIAL BACKFILL.
- FOR WATER AND SEWER, 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE ALL PIPES AND LATERALS.
- 4. FOR WATER AND SEWER, 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED AND COLOR CODED PER THE DESIGN STANDARDS SHALL BE BURIED IN THE TRENCH AND ABOVE ALL PIPES AND LATERALS.
- REFER TO STANDARD DRAWINGS U-3 TO U-3b FOR ADDITIONAL REQUIREMENTS FOR WATER AND SEWER TRENCHES.

SPECIAL NOTES:

- A. SPECIAL CONSIDERATION SHALL BE TAKEN BY THE DESIGNER TO ENSURE SURFACE DRAINAGE WILL NOT ENTER THE TRENCH.
- B. WHEN TRENCHING ON STEEP SLOPES, CUT-OFF WALLS AND/OR PIPE ANCHORS MAY BE REQUIRED BY THE DEPARTMENT AND SHALL BE DETAILED ON THE PLANS.
- C. TRENCHING ALIGNMENT SHALL BE DESIGNED TO AVOID DAMAGE TO EXISTING TREES AND THEIR ROOT SYSTEMS. WHEN ADJACENT TO TREES THEN THE TRENCHING RECOMMENDATIONS OF THE PROJECT BOTANIST SHALL BE FOLLOWED.
- D. THE UPPER SURFACE SHALL BE SCARIFIED AND REVEGETATED. VEGETATIVE COVER SHALL BE ESTABLISHED PRIOR TO ACCEPTANCE OF WORK.

| BEDDI | NG MATERIAL | STRUCT | URAL MATERIAL |
|-------------|-----------------|-------------|-----------------|
| SIEVE SIZES | PERCENT PASSING | SIEVE SIZES | PERCENT PASSING |
| 1" | 100% | 3" | 100% |
| No. 4 | 80% - 100% | No. 4 | 35% - 100% |
| No. 200 | 0% - 15% | No. 30 | 20% - 100% |

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TRENCH DETAIL NON-PAVED AREAS

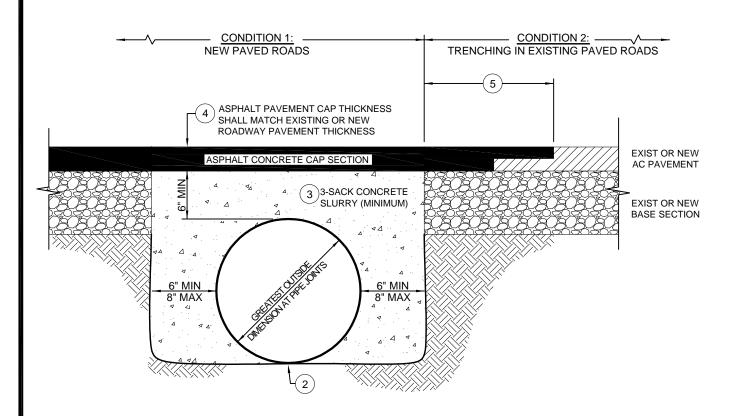
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- 1. USE OF THIS STANDARD DRAWING REQUIRES PRIOR DEPARTMENT APPROVAL AND SHALL ONLY BE ALLOWED IF REQUIRED COVER CANNOT BE ATTAINED.
- 2. PIPE SHALL BE PLACED ON UNDISTURBED NATIVE MATERIAL UNLESS EXISTING SOILS CONDITIONS REQUIRE ADDITIONAL MEASURES.
- 3. BACKFILL TRENCH WITH MINIMUM THREE (3) SACK CONCRETE SLURRY TO SURFACE OF BASE COURSE SECTION. DO NOT PLACE AGGREGATE BASE ABOVE SLURRY BACKFILL.
- 4. ASPHALT CONCRETE PAVEMENT THICKNESS TO MATCH EXISTING PAVEMENT SECTION OR MATCH APPROVED PAVEMENT THICKNESS FOR NEW ROADS.
- 5. WHEN TRENCHING INTO EXISTING STRUCTURAL SECTION PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH STANDARD DRAWING R-4 OR R-4a.
- 6. PIPE SHALL BE SECURED IN PLACE TO KEEP LINE AND GRADE WHILE CONCRETE SLURRY IS PLACED AND UNTIL THE SLURRY HAS SET.
- 7. THE DEPARTMENT MAY REQUIRE ADDITIONAL WORK WHEN TRENCHING IN EXISTING ROADS HAVING CONCRETE STRUCTURAL SECTIONS.



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SHALLOW TRENCH DETAIL

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| THRUST | AT FITTING | GS AT 100 I | PSI WATER | PRESSUR | E (lbs) |
|----------|------------|-------------|-----------|---------|-----------|
| PIPE DIA | PIPE CLASS | TEES | 90 BEND | 45 BEND | 22.5 BEND |
| 4" | 100 | 1,720 | 2,440 | 1,320 | 660 |
| 4" | 150 | 1,850 | 2,610 | 1,420 | 720 |
| 4" | 200 | 1,850 | 2,610 | 1,420 | 720 |
| 6" | 100 | 3,560 | 5,030 | 2,720 | 1,380 |
| 6" | 150 | 3,800 | 5,370 | 2,910 | 1,470 |
| 6" | 200 | 3,800 | 5,370 | 2,910 | 1,470 |
| 8" | 100 | 6,140 | 8,680 | 4,700 | 2,380 |
| 8" | 150 | 6,580 | 9,300 | 5,040 | 2,550 |
| 8" | 200 | 6,580 | 9,300 | 5,040 | 2,550 |
| 10" | 100 | 9,380 | 13,270 | 7,190 | 3,640 |
| 10" | 150 | 10,750 | 15,200 | 8,240 | 4,170 |
| 10" | 200 | 10,750 | 15,200 | 8,240 | 4,170 |
| | | | | | |
| 12" | 100 | 13,300 | 18,860 | 10,240 | 5,170 |
| 12" | 150 | 15,310 | 21,640 | 11,720 | 5,940 |
| 12" | 200 | 15,310 | 21,640 | 11,720 | 5,940 |
| 14" | 100 | 17,930 | 25,360 | 13,740 | 6,960 |
| 14" | 150 | 20,770 | 29,360 | 15,910 | 8,060 |
| 14" | 200 | 20,700 | 29,360 | 15,910 | 8,060 |
| 16" | 100 | 23,210 | 32,820 | 17,880 | 9,000 |
| 16" | 150 | 26,880 | 38,010 | 20,590 | 10,430 |
| | | , | | | · · |
| 16" | 200 | 26,880 | 38,010 | 20,590 | 10,430 |

TABLE 1

| HORIZONTAL BEARING STRENGTHS | | | | |
|------------------------------|--------------------------------------|--|--|--|
| SOIL TYPE | HORIZONTAL BEARING STRENGTH (lbs/sf) | | | |
| MUCK | 0 | | | |
| SOFT CLAY | 1,000 | | | |
| SILT | 1,500 | | | |
| SANDY SILT | 3,000 | | | |
| SAND | 4,000 | | | |
| SANDY CLAY | 6,000 | | | |
| HARD CLAY | 9,000 | | | |

TABLE 2

Source: DIPRA - Thrust Restraint Design

NOTE:

- 1. ALTHOUGH THE ABOVE BEARING STRENGTH VALUES HAVE BEEN USED SUCCESSFULLY IN THE DESIGN OF THRUST BLOCKS AND ARE CONSIDERED TO BE CONSERVATIVE, THEIR ACCURACY IS TOTALLY DEPENDENT ON ACCURATE SOIL IDENTIFICATION AND EVALUATION. THE ULTIMATE RESPONSIBILITY FOR SELECTING THE PROPER BEARING STRENGTH OF A PARTICULAR SOIL TYPE SHALL BE THE RESPONSIBILITY OF THE PROJECT ENGINEER.
- 2. ALL THRUST BLOCK AREAS SHALL BE PROVIDED ON THE APPROVED PLANS.

EXAMPLE:

DETERMINE THE THRUST BLOCK AREA FOR A 90° BEND, 8" CLASS 150 PIPE IN CLAY.

 $PRESSURE = 150 + 50 \ (TEST\ PRESSURE) = 200\ psi. \ CHOOSE\ 9,300\ lbs\ FROM\ TABLE\ 1\ AND\ ADJUST\ TO\ 18,600\ lbs\ FOR\ 200\ psi.$ $CHOOSE\ 1,000\ lbs/sf\ FROM\ TABLE\ 2.$

RESULT: 18,600 lbs / 1,000 lbs/sf = 18.6 sf

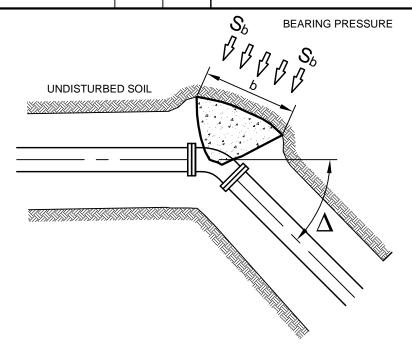
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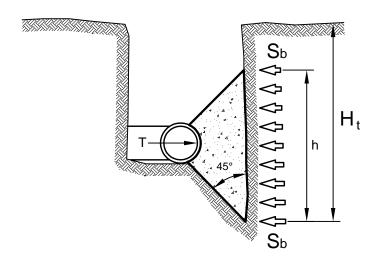
THRUST BLOCK REQUIREMENTS

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THE REQUIRED BEARING BLOCK AREA IS $Ab = hb = \frac{Sf T}{Sb}$

THEN, FOR A HORIZONTAL BEND,

 $b = \frac{Sf \ 2 \ PA \ sin \ (\Delta/2)}{h \ Sb}$

LEGEND:

A = INTERNAL AREA, in²

P = INTERNAL PRESSURE, psi

 $S_f = Safety Factor$

T = THRUST, lbs

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THRUST BLOCK DETAILS

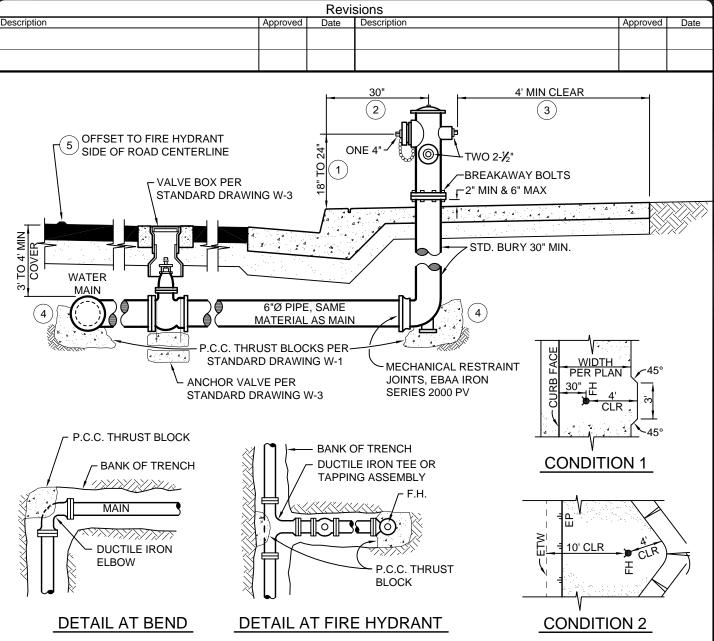
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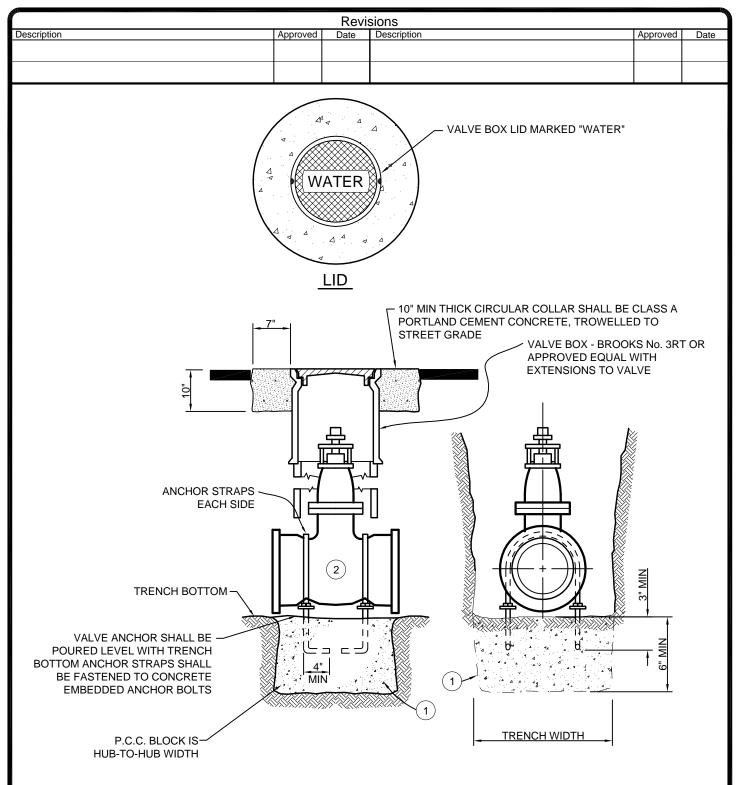
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- 1. HEIGHT SHALL BE MEASURED FROM EDGE OF PAVEMENT WHEN CONCRETE CURB OR ASPHALT DIKE ARE NOT REQUIRED PER THE DESIGN STANDARDS.
- 2. DISTANCE SHALL BE INCREASED TO 10-FEET CLEAR FROM THE EDGE OF TRAVELED WAY (ETW) WHEN CONCRETE CURB OR ASPHALT DIKE ARE NOT REQUIRED PER THE DESIGN STANDARDS.
- 3. IN RURAL AREAS A 4' MINIMUM RADIUS CLEAR AND LEVEL ZONE SURROUNDING THE FIRE HYDRANT SHALL BE REQUIRED.
- 4. THRUST BLOCKS SHALL BE PORTLAND CEMENT CONCRETE PER DESIGN STANDARDS, POURED AGAINST UNDISTURBED SOIL AND SHIELDED FROM FLANGES AND BOLTS.
- 5. EACH HYDRANT SHALL BE IDENTIFIED BY A REFLECTORIZED BLUE RAISED PAVEMENT MARKER PER SECTION 10.301c OF THE UNIFORM FIRE CODE.
- 6. THE HYDRANT CAP AND OUTLET NOZZLE SHALL BE PAINTED IN ACCORDANCE WITH TABLE 6.6 OF 6.2.1.D.2.
- 7. THE CONCRETE CURB OR ASPHALT DIKE SHALL BE PAINTED RED 15-FEET EITHER SIDE OF THE FIRE HYDRANT.
- 8. HYDRANT SHALL BE CLOW F2060, OR APPROVED EQUAL.
- 9. EACH HYDRANT SHALL HAVE TWO 2-1/2" OUTLETS AND ONE 4" OUTLET WITH EXTERNAL NSF THREAD.
- 10. ALL FITTINGS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH AWWA STANDARD C-104.
- 11. HYDRANT LATERAL SHALL BE OF THE SAME MATERIAL AS THE MAIN.
- 12. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE, BROUGHT ABOVE GRADE AND SECURED TO THE HYDRANT BOLT FLANGE.
- 13. COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.



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Sheet No: 1 OF 1



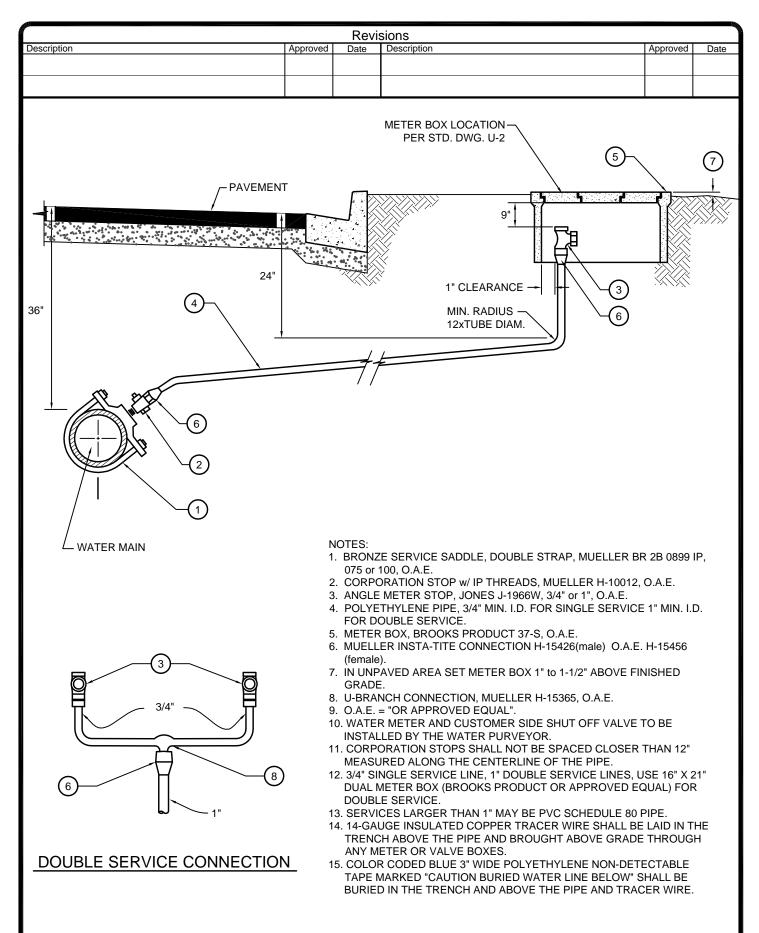
- 1. THRUST BLOCKS SHALL BE NOT LESS THAN 5-SACK PORTLAND CEMENT CONCRETE AND POURED AGAINST UNDISTURBED NATIVE SOIL
- 2. VALVES SHALL HAVE NON-RISING STEM, RESILIENT WEDGE, RESILIENT SEAT, AND BE EPOXY COATED.
- 3. ALL MATERIALS AND INSTALLATION SHALL CONFORM WITH THE APPLICABLE SECTIONS OF THE DESIGN STANDARDS.
- 4. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE SHEET AND ALL FLANGES AND BOLTS SHALL BE SHIELDED FROM CONCRETE PER THE DESIGN STANDARDS.
- 5. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

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VALVE ANCHOR & BOX

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WATER SERVICE CONNECTION

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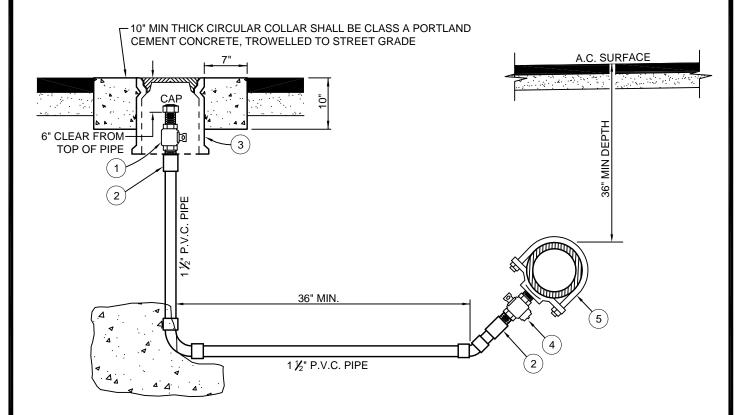
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ON-RUN CONNECTION OR DEAD END

NOTES:

- 1. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
- 2. COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.
- 3. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

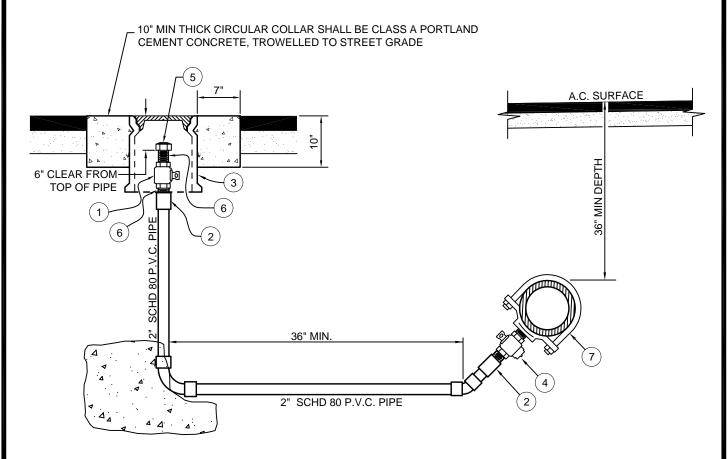
| ITEM NO. | NO. REQ'D. | SIZE AND DESCRIPTION | MATERIAL SPECIFICATION |
|-------------|---------------|------------------------------|---|
| 1 | 1 | 1-1/2" CURB STOP | JAMES JONES J-182 WITH LOCKWING, MUELLER, OR APPROVED EQUAL |
| 2 | 2 | 1-1/2" ADAPTER | I.P. THREAD-P.V.C. SLIP |
| 3 | 1 | VALVE BOX WITH CAST IRON LID | CHRISTY G-8, BROOKS 3-RT, OR APPROVED EQUAL |
| 4 | 1 | 1-1/2" CORPORATION STOP | JAMES JONES J-40, MUELLER H-10012, OR APPROVED EQUAL |
| 5 | 1 | SERVICE SADDLE | MUELLER BRONZE DOUBLE STRAP BR 2B 0899 IP 200, O.A.E. |

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BLOW-OFF ASSEMBLY

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ON-RUN CONNECTION OR DEAD END

NOTES:

- 1. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
- 2. COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.
- 3. UNDER NO CIRCUMSTANCES SHALL UTILITY LIDS AND CONCRETE COLLARS BE LOCATED WITHIN CURBS, GUTTERS, SIDEWALKS, DRIVEWAY APRONS, CURB RAMPS, OR CROSS GUTTERS.

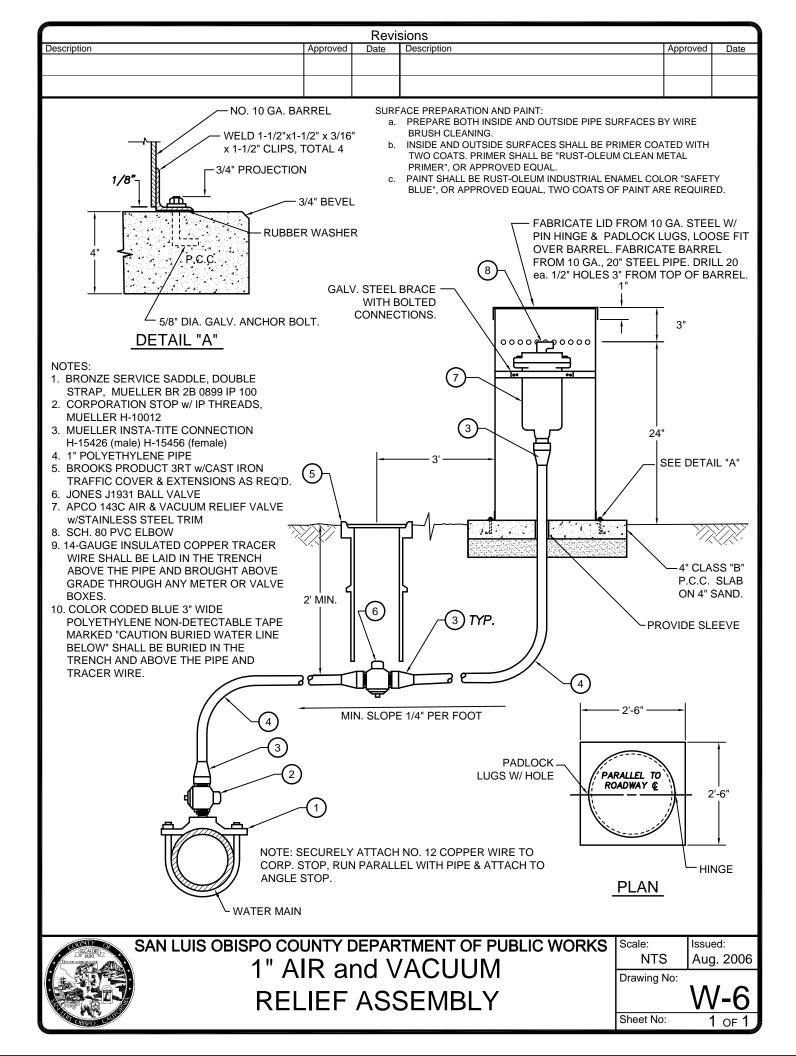
| ITEM NO. | QTY. REQ'D. | SIZE AND DESCRIPTION | MATERIAL SPECIFICATION |
|-------------|----------------|------------------------------|---|
| 1 | 1 | 2" CURB STOP | JAMES JONES J-182 WITH LOCKWING, MUELLER, O.A.E. |
| 2 | 2 | 2" ADAPTER | I.P. THREAD x P.V.C. SLIP |
| 3 | 1 | VALVE BOX WITH CAST IRON LID | CHRISTY G-8, BROOKS 3-RT, O.A.E. |
| 4 | 1 | 2" CORPORATION STOP | JAMES JONES J-40, MUELLER H-10012, O.A.E. |
| 5 | 1 | 2" IP GALV. CAP | |
| 6 | 2 | 2" IP GALV. NIPPLE | |
| 7 | 1 | SERVICE SADDLE | MUELLER BRONZE DOUBLE STRAP BR 2B 0899 IP 200, O.A.E. |

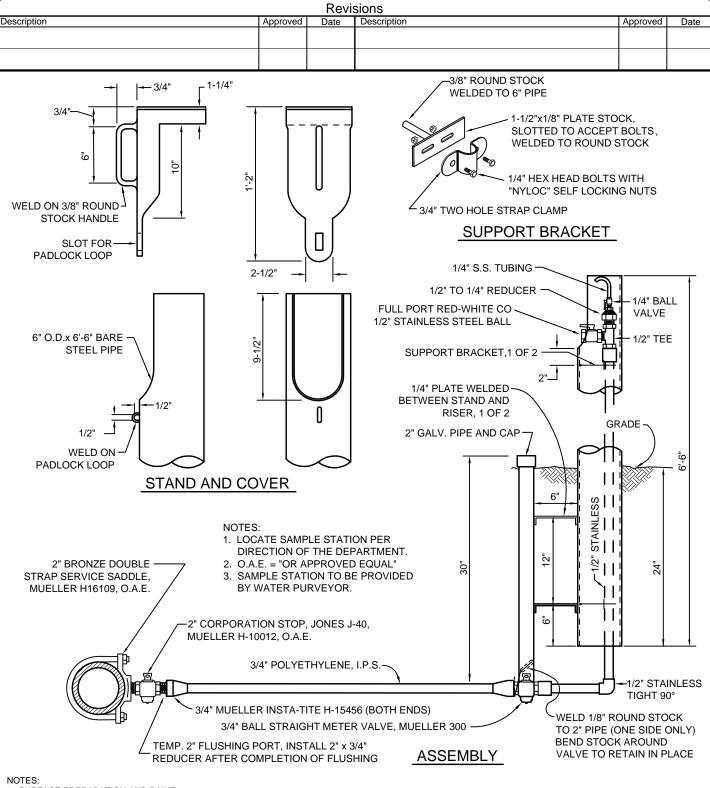
O.A.E. = "OR APPROVED EQUAL"

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2" BLOW-OFF ASSEMBLY

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- 1. SURFACE PREPARATION AND PAINT:
 - a. WELD ALL SUPPORT BRACKETS TO PIPE PRIOR TO PAINTING.
 - b. PREPARE BOTH INSIDE AND OUTSIDE PIPE SURFACES BY WIRE BRUSH CLEANING.
 - c. INSIDE AND OUTSIDE SURFACES SHALL BE PRIMER COATED WITH TWO COATS. PRIMER SHALL BE "RUST-OLEUM CLEAN METAL PRIMER", OR APPROVED EQUAL.
 - d. PAINT SHALL BE RUST-OLEUM INDUSTRIAL ENAMEL COLOR "SAFETY BLUE", OR APPROVED EQUAL, TWO COATS OF PAINT ARE REQUIRED.

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- 2. 14-GAUGE INSULATED COPPER TRACER WIRE SHALL BE LAID IN THE TRENCH ABOVE THE PIPE AND BROUGHT ABOVE GRADE THROUGH ANY METER OR VALVE BOXES.
- COLOR CODED BLUE 3" WIDE POLYETHYLENE NON-DETECTABLE TAPE MARKED "CAUTION BURIED WATER LINE BELOW" SHALL BE BURIED IN THE TRENCH AND ABOVE THE PIPE AND TRACER WIRE.

WATER SAMPLING STATION

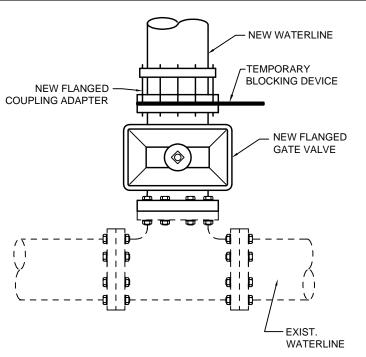
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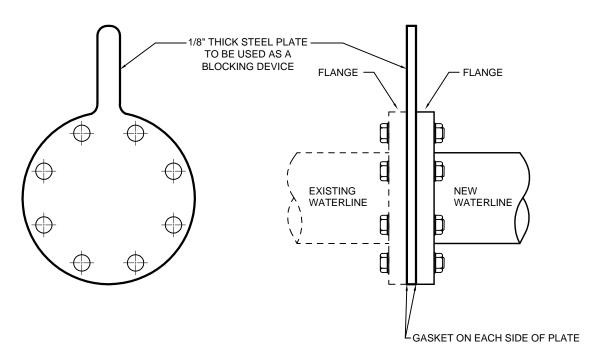
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Sheet No: | 1 of 1

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- 1. DIRECT CONNECTION TO THE EXISTING WATER SYSTEM SHALL NOT BE PERMITTED UNTIL THE NEW INSTALLATION HAS PASSED BACTERIA TESTING AND A PHYSICAL CHECK BY THE WATER QUALITY MANAGER. SEPARATION SHALL BE ACHIEVED BY THE INSTALLATION OF THE TEMPORARY BLOCKING DEVICE AS SHOWN HEREON
- 2. PRESSURE TESTING AGAINST VALVES SHALL NOT BE ALLOWED. NEW VALVES SHALL BE SWABBED WITH CHLORINE PRIOR TO INSTALLATION.
- WHEN TEMPORARY BLOCKING DEVICE IS REMOVED, THE CONTRACTOR SHALL ADJUST FITTING TO ELIMINATE 1/8" GAP WITHOUT FORCING THE JOINT TOGETHER.
- 4. TEST PRESSURE SHALL BE 50 PSI GREATER THAN THE WORKING PRESSURE OF THE PIPE MEASURED AT THE LOWEST ELEVATION OF THE SYSTEM OR 150 PSI, WHICHEVER IS GREATER.





PROCEDURE FOR CONNECTING NEW WATERLINES TO EXISTING SYSTEM (ALTERNATIVE TO THE OLD INDUSTRIAL STANDARD METHOD): AT THE POINT OF CONNECTION TO THE EXISTING SYSTEM, ALL JOINTS BETWEEN FITTINGS AND VALVES SHALL BE FLANGED. ANY CHANGE REQUIRES WRITTEN APPROVAL FROM THE DEPARTMENT. AT THE JOINT THAT CONNECTS THE EXISTING SYSTEM TO THE NEW LINE, A BLOCKING DEVICE SHALL BE INSTALLED. THIS DEVICE SHALL BE CONSTRUCTED OF 1/8" THICK STEEL PLATE. IT SHALL BE INSTALLED BETWEEN THE TWO FLANGES WITH A GASKET ON EACH SIDE. THIS WILL ALLOW ALL FITTINGS, VALVES, AND THE PIPELINE TO BE DISINFECTED AND PRESSURE TESTED AS ONE UNIT. AFTER THE NEW SYSTEM HAS MET ALL REQUIREMENTS, THE DEPARTMENT WILL ALLOW THE CONTRACTOR TO REMOVE THE BLOCKING DEVICE. THE DEVICE AND BOTH GASKETS ARE TO BE REMOVED AND A NEW GASKET SHALL BE INSTALLED BETWEEN THE FLANGES. THE NEW SYSTEM IS THEN IN SERVICE.

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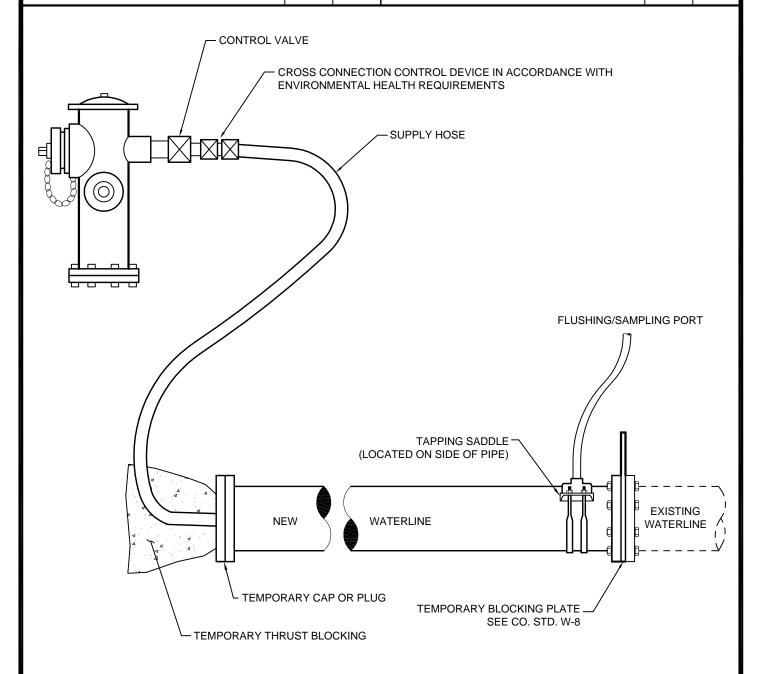
NEW WATERLINE CONNECTION DETAILS

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1. DIRECT CONNECTION TO THE EXISTING WATER SYSTEM SHALL NOT BE PERMITTED UNTIL THE NEW INSTALLATION HAS PASSED BACTERIA TESTING. MAINTAIN AIR GAP PER AWWA STD. C651

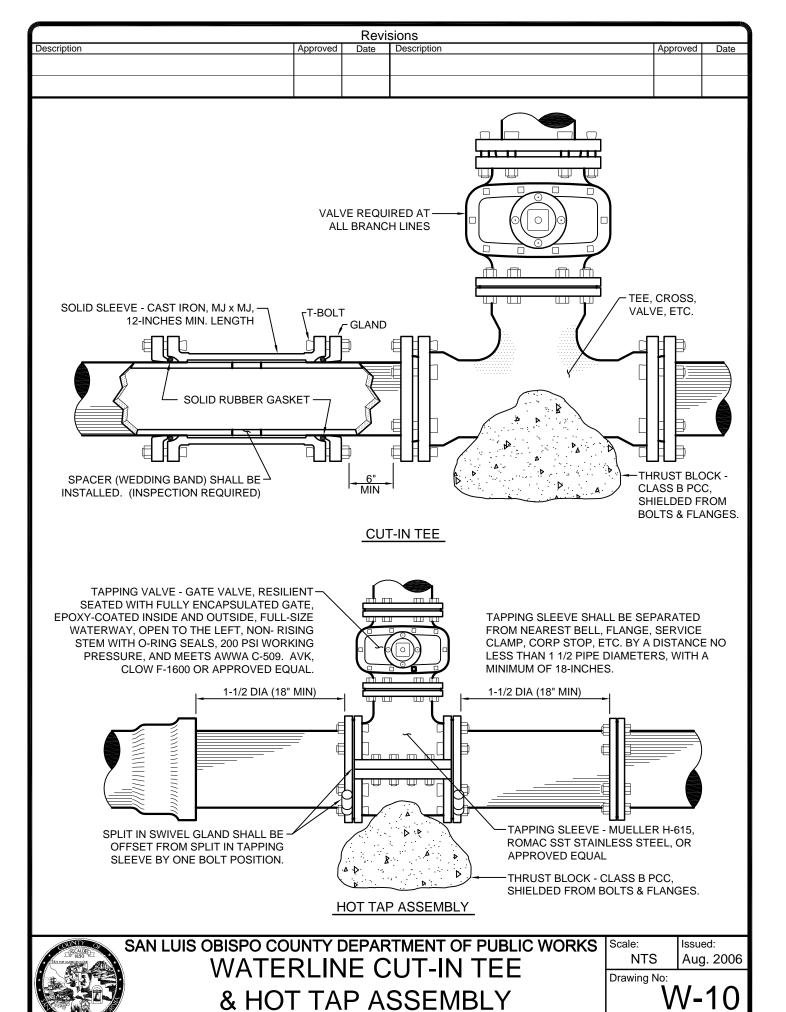
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FLUSHING DETAIL

Scale: Issued: Aug. 2006

Drawing No:

W-9



Sheet No:

1 of 1